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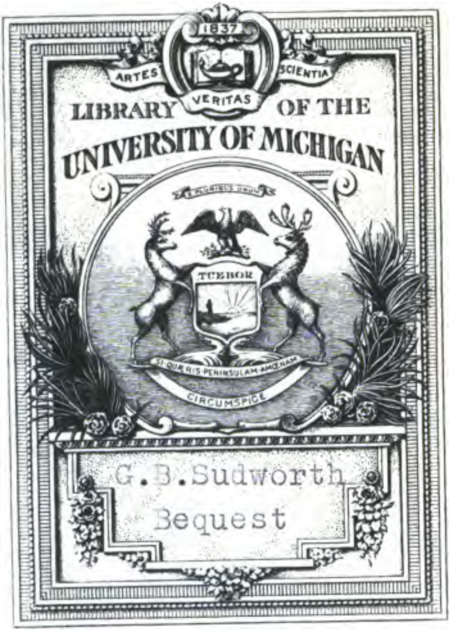

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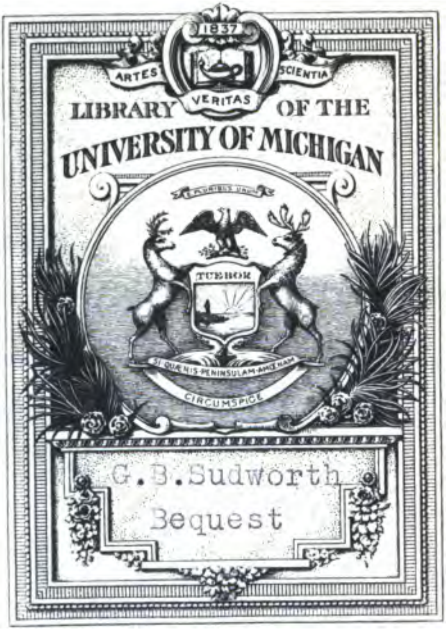

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U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

FIRST-AID MANUAL FOR FIELD PARTIES

BY

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WASHINGTON
GOVERNMENT PRINTING OFFICE
1917

Acknowledgment is hereby made to the United States Public Health Service and to the American Red Cross for suggestions and assistance rendered in the preparation of this manual.

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FIRST-AID MANUAL FOR FIELD PARTIES.

FIRST AID.

First aid is the giving of immediate treatment by persons to sufferers from accident or those overcome by sudden illness before regular medical or surgical care can be obtained.

No positive line of procedure can be laid down for any particular case, since the circumstances surrounding each accident or illness are necessarily different. The first-aid worker must use common sense and, if he can not follow exactly the methods suggested, should adopt the ones most practical to relieve the patient and prevent a bad condition from becoming worse.

The object of first aid is to give the right kind of assistance before the doctor can be reached, during which time bleeding must be controlled, broken bones and dislocated joints so fixed that they can cause no further injury, pain relieved as much as possible, and the patient made as comfortable as can be without endangering his safety.

Where a doctor is not available, some person, preferably with a knowledge of first aid, should be designated to have charge of all such work.

In all serious cases, or cases which may develop into serious conditions later on, the patient should be taken to a doctor or a doctor brought to the patient as soon as it can be done. When a doctor is sent for he should be informed of the nature of the accident or illness, in order that he may bring with him such medicine and instruments as may be required.

The person rendering first aid should not get excited, but should perform his work in a calm, collected manner, as only in this way can proper treatment be given and the injured person inspired with confidence in the ability of the person aiding him.

Persons giving first-aid treatment should not yield to the temptation to do too much. It is just as important to know what not to do and when to stop as it is to know what to do.

It should be remembered that the first few minutes after an accident may determine whether the patient is to recover completely or be condemned to a long siege of suffering, crippled for life, or perhaps die from the effects of the injury.

Ordinarily the first thing to do in a case requiring first-aid treatment is to get the patient into as comfortable a position as possible. The best position is on the back with the head low, except in cases of fracture of the skull or where the face is flushed, when the head and shoulders should be slightly elevated. Loosen the collar and any tight belts, etc., that might interfere with breathing or circulation.

The injury should always be carefully examined. To do this, remove such clothing as may be necessary, undressing the sound side first, so that the injured side will be subjected to the least movement. In removing the clothing rip the seams in the outer clothing and cut or tear the underclothing. If necessary to remove the boots or shoes, cut them away rather than try to pull them off.

In examining a wound the greatest care should be used to prevent dirt getting into it (see p. 29).

Should an injured person ask for water, give it to him, but see that he drinks slowly.

Stimulants are best when given hot, heat itself being a powerful stimulant; but they should never be given in cases of injury to the head or in case of serious hemorrhage until the bleeding has been checked.

Unconscious persons can not swallow, and no effort should be made to give them water, stimulants, etc., by the mouth, since this would choke them.

If vomiting occurs, place the patient on his side or turn the head to one side, so that the vomited matter will not get into the windpipe and cause him to choke. The mouth may be swept clean of vomited matter by means of the finger wrapped with a clean napkin, handkerchief, or towel.

It is important that anyone who intends to render first aid should make a careful study of the illustrations showing the human skeleton and the various joints as they exist under normal conditions (fig. 1), the distribution of the blood supply throughout the body, and the points at which pressure should be applied to control hemorrhage. (Figs. 22–25.)

Field parties should be equipped with a proper first-aid outfit. The following list of equipment may be used as a basis for selection to meet the needs anticipated:

Absorbent cotton: Principally for padding under splints.
Absorbent gauze: For use on wounds; may be held on by bandages; do not touch gauze that goes next to wounds with fingers or anything else.
Alcohol: To rub bruises and sprains.
Ammonia water (not more than 3 per cent strength); Use like smelling salts in fainting or shock.
Antiseptic soap: For cleansing hands before giving first aid to wounds. Not for use on wounds.
Antiseptic tablets (colored and marked "Poison"): For making solution to disinfect the hands and for washing infected wounds when necessary.
Aromatic spirits of ammonia: Stimulant used in case of shock or fainting.
Bandages, roller (1-inch, 2-inch, and 3-inch widths).
Bandages, triangular.
Calomel and bicarbonate of soda tablets, one-half grain each: Purgative.
Castor oil: Cathartic, taken in doses of one-half to 1 fluid ounce.
Chloroform liniment: To relieve local pain due to sprains and bruises.
Compound cathartic pills (vegetable): Mild laxative in one-pill doses; two to three pills produce brisk action.
Ear drops (carbolic acid, 48 grains; alcohol, 1 dram; glycerine, 1 ounce).
Eye drops (cocaine, one-half grain; boracic acid, 15 grains; water, 1 ounce).

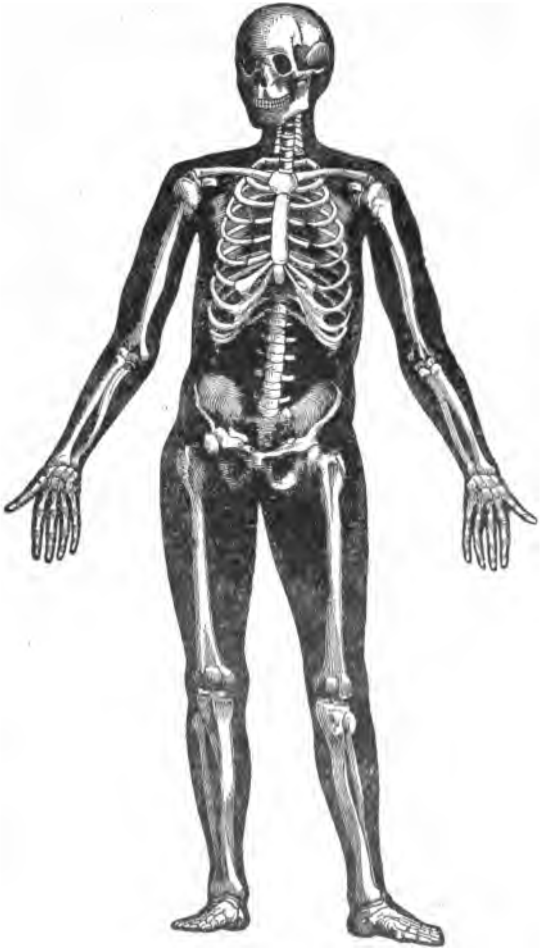

FIG. 1.—The human skeleton.

Forceps, small pair: For pulling out splinters.
Fountain syringe: For giving enemas, and, in case of need, for washing out the ears.
Medicine droppers.
Mustard: To produce vomiting. Dose, one to two teaspoonfuls in glass of warm water.
Mustard plasters (prepared): To relieve local pain.
Oil of cloves: For toothache, when there is a cavity.
Olive oil: Two to three drops in the eye in case of injury or when there is something in the eye.
Picric acid gauze: For use on large burns or scalds.
Quinine (2-grain pills).
Safety pins: To pin bandages or dressings in place.
Sanitary paper cups.
Scissors.
Strychnine sulphate tablets (1/60 grain each): For stimulant.
Toothache wax.
Tourniquet: Used to stop bleeding.
Turpentine.
Vaporoles of iodine: Applied to all slight abrasions, cuts, scratches, etc.; to prevent infection.
Wire-gauze splints.
Zinc oxide adhesive plaster, 3 inches wide.

The bandages and compresses can be purchased at almost any drug store and should be of the compressed kind, as these take up such little space. These having been sterilized (made surgically clean) and properly protected after being put up in sealed packages are ready for instant use.

The illustrations showing the methods of treating fractures, applying bandages, etc., show the dressings applied to a figure in the nude. It is not intended by this to convey the impression that it is necessary to remove the clothing in all cases; in many instances it need not be removed at all. The purpose is to show more clearly than could be done on a draped figure the proper location of the parts of the dressings in their relationship to the landmarks of the body (bones, joints, etc.).

In many of the illustrations in which splints are shown, the bandages and padding have been purposely omitted in order to show more clearly the exact manner in which the splints should be applied.

TRANSPORTATION OF THE SICK AND INJURED.

After giving first-aid treatment,, the next thing is to get the sick or injured person to a place where proper medical attention can be obtained. In the field the problem of transporting a patient is just as important as that of giving proper treatment on the ground, since no matter how skillfully the latter may have been carried out, all the good accomplished is likely to be undone or the patient's condition even made worse if he is not transported in the proper way.

When a patient has to be taken only a short distance and the case is not serious he may be assisted or carried by one or two persons, as the case may be, in the manner shown in figures 2, 3, and 4.

Persons suffering from serious illness or injury, however, should be moved only on stretchers whenever it is possible to obtain or make one.

A stretcher can be made by using two coats and a pair of poles. The sleeves of the coats are first turned inside out, the poles passed through the sleeves, and the coats buttoned up, the buttoned side being turned down.

A blanket and two poles will also serve for a stretcher or bags and sacks may be stretched over two poles.

Always test the strength of a stretcher by placing an uninjured person on it before attempting to carry an injured one.

In carrying a stretcher the bearers should never keep in step, as to do so would jar the patient too much. A stretcher should never be carried upon the shoulders of the bearers.

Always carry a patient with the feet foremost, except when going up hill or where the injury is a fracture of the lower limb. In the latter case, when going down a steep hill carry

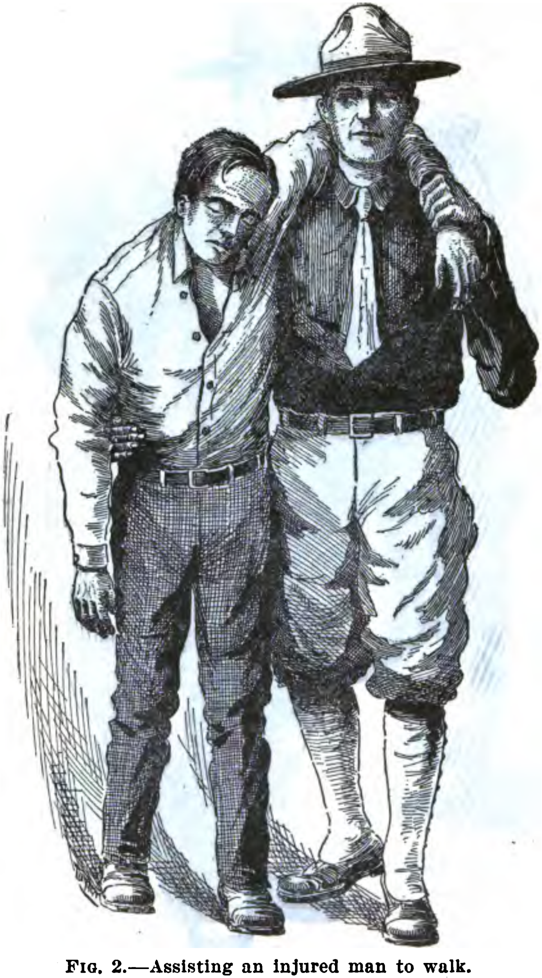

FIG. 2.—Assisting an injured man to walk.

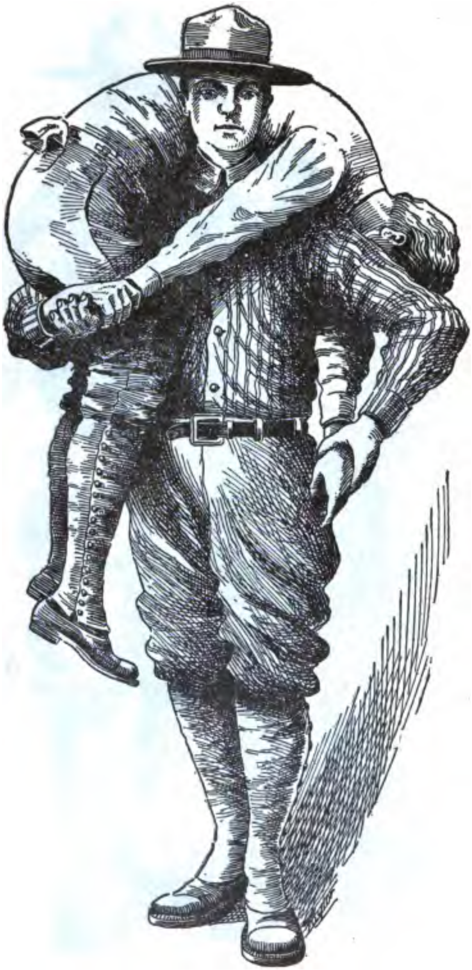

FIG. 3.—Carrying an injured person across the back.

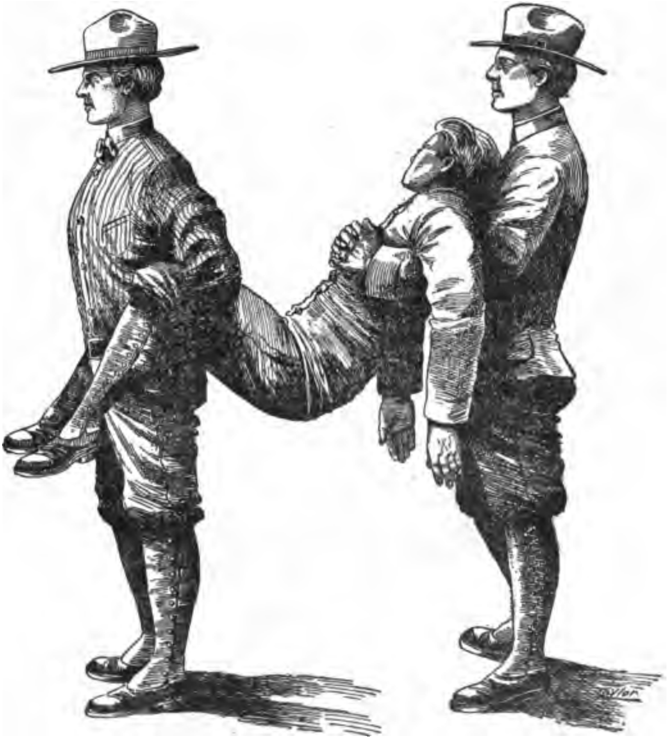

FIG. 4.—Two bearers carrying an injured man.

him head foremost, keeping the body as nearly on a level as possible.

When a patient has to be transported a great distance and a wheel vehicle is not available, two horses or mules can be made to take the place of stretcher bearers. The stretcher should be made in the same manner as any other, except that the side poles should be from 18 to 20 feet long and held apart by crossbars, so that the animals can be hitched between them, the ends of the poles being securely fastened to the saddles, with the carrying part of the stretcher between the two horses. If possible, one man should lead each horse and one look after the patient.

Another means of conveying the sick or injured for a considerable distance is by a "travois." This consists of two poles and two crossbars so arranged that a stretcher may be placed upon them (fig. 5). The poles should be about 16 feet long, one pole being slightly shorter than the other in order to prevent jarring over rough places, and should be held from about 2½ to 3 feet apart by the crossbars, the first of which should be about 6 feet from the front end and the latter about an equal distance from the rear end of the poles. When a patient is being transported in this manner one man should lead the horse or mule and another follow in the rear of the travois to look after the comfort of the patient and raise the ends of the poles when there is any obstruction in the path which would be likely to cause severe jolting.

ACCIDENTS.

Accidents can not all be avoided, but it has been estimated that more than 50 per cent of them are preventable. Much suffering could therefore be avoided by care, particularly in hazardous work.

BANDAGES, COMPRESSES, PLASTERS, POULTICES, AND SPLINTS.

BANDAGES.

Bandages are used to keep dressings and splints in place, to stop bleeding, and as slings.

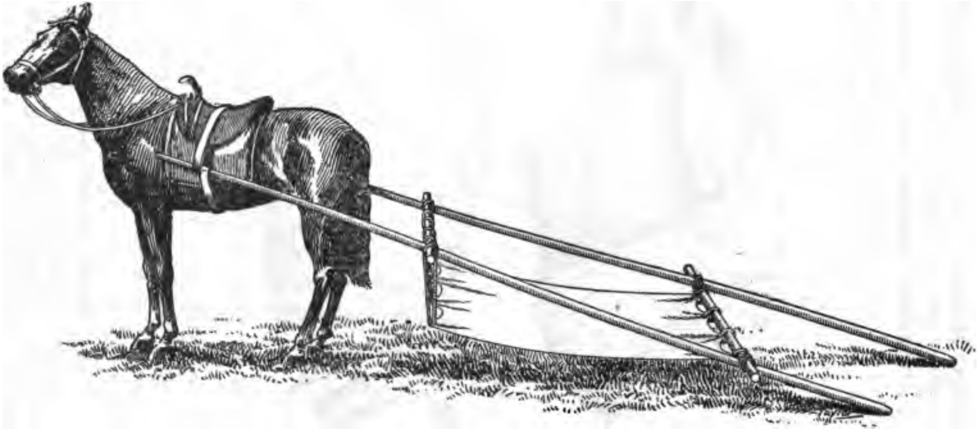

FIG. 5.—A travois.

The triangular bandage is the best for first-aid work, and the roller bandage the next best.

To make a **triangular bandage,** take a piece of any strong cloth about a yard square, fold it diagonally, and cut across the fold, thus making two triangular bandages of the proper size. Bed sheets, napkins, or handkerchiefs can all be used for the purpose. Figures 6 to 11 show the proper application of the triangular bandage to the injured parts.

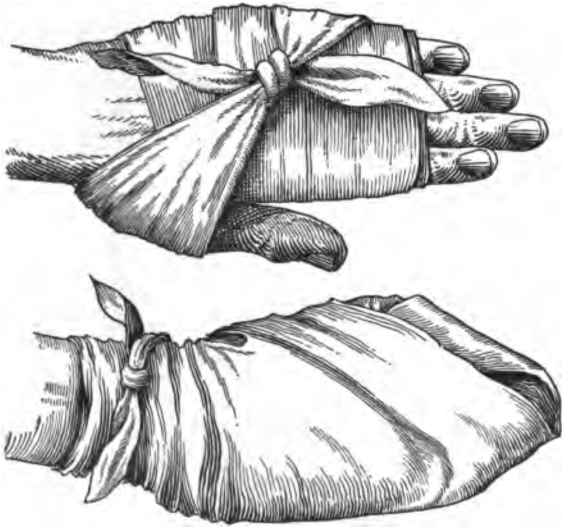

FIG. 6.—Triangular bandage for the hand.

This bandage can be made into a tourniquet by folding so as to make it a narrow bandage, and then twisting it until it is ropelike. It can then be tied around the limb, a pad placed beneath it, a stick through it, as shown in figure 26, and the necessary pressure obtained by twisting the stick.

The **roller bandage** is much harder to apply properly than a triangular bandage, and the process requires more time and experience than with the latter kind. The first-aid man should use the triangular bandage wherever possible. In applying a roller bandage to a limb always bandage from below up, and from within outward, applying the bandage firmly but not too tightly. Figures 12 to 20 show the roller bandage applied to different parts of the body.

Always put a bandage over a splint, never under one. Never apply a wet bandage, because when it dries it will shrink and become too tight. In applying a bandage immediately after an injury has been received make allowances for swelling. If the bandage becomes too tight, it should be removed or loosened at once.

Always leave the tips of the fingers and toes uncovered, so that they may be seen and felt. If they get cold or become bluish, it is an indication that the bandage has been put on too tight and is interfering with the circulation and should therefore be loosened immediately.

Before applying the bandage place the injured limb in the position in which it is intended to leave it. Never bandage a limb while it is straight and afterwards bend it.

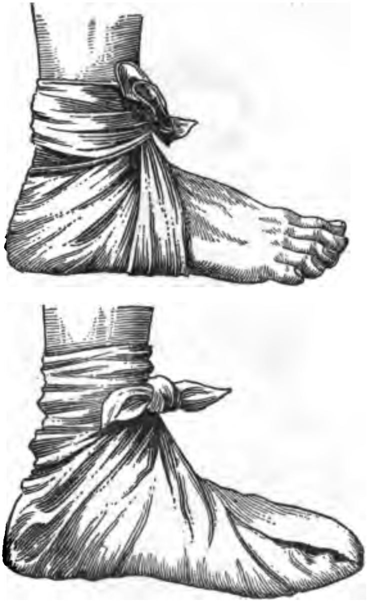

FIG. 7.—Triangular bandage for the foot.

To apply bandages properly requires more or less practice. Field men can well devote a part of their spare time in trying to bandage an uninjured part either on their own body or that of another person. One can never tell when he will be called on to render first aid to himself or others or when it may be necessary for some other person to render first aid to him.

COMPRESSES.

A compress is a pad, preferably made of gauze or cheesecloth, applied so as to make pressure upon any particular part. It is used where it is necessary to exert pressure upon or to cover an open wound.

Compresses should always be surgically clean; that is, properly disinfected and not contaminated by the fingers or by anything else used in handling them. If it is impossible to obtain a surgically clean compress, take the most recently laundered towel, handkerchief, or napkin available and apply the inner surface to the wound.

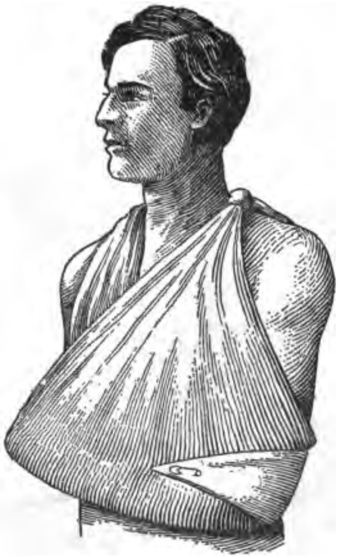

FIG. 8.—Triangular bandage applied to the arm as a broad sling.

PLASTERS.

Court and adhesive plasters should never be used in closing wounds, because in a majority of wounds pus or other germs have been introduced, and to close them with either of these materials would be to seal the germs within the wound and cause inflammation.

Adhesive plaster is valuable in holding bandages and dressing in place and in strapping the chest for fracture of the ribs (fig. 32). It can also be used advantageously to hold the edges of a long cut wound together in the manner shown in figure 21.

Mustard plasters are used to relieve deep-seated pain and inflammation. Care should be taken not to leave them on too long, as they are likely to blister the patient, particularly in the case of old people and children. From 10 to 20 minutes is long enough to leave them on.

Ready-made mustard plasters can be purchased at drug stores and are preferable to those that could be made in the field, being cleaner and ready for instant use after being soaked in hot water.

To make a mustard plaster, take one part of mustard and four parts of flour and make into a paste with tepid water. Spread this mixture on a piece of cloth and cover with cheesecloth or other thin material in order that the mixture may not come in direct contact with the skin.

POULTICES.

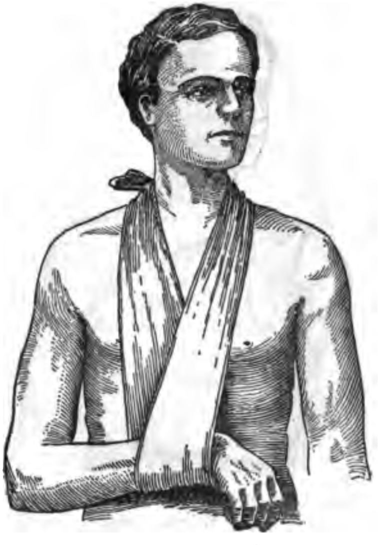

FIG. 9.—Triangular bandage applied to the arm as a narrow sling.

Poultices are used to relieve pain and inflammation and will retain their heat for a long time. They should not, however, be applied to an open wound, boil, or carbuncle.

Poultices can be made from flaxseed, corn meal, or bread (without crust). Bread poultices have to be renewed frequently, as they become sour in a very short time.

Flaxseed poultice.—To make a flaxseed poultice, take boiling water and add to it gradually flaxseed meal, stirring

It is far better to leave the wound exposed to the air than to wash it in contaminated water, as there is slight danger of contamination to be feared from the air, in which pus germs do not float, so that infection can not be carried to a wound in this manner unless the air be full of dust.

Water which is apparently perfectly fresh and pure may, and often does, contain germs. All water used in treating or cleansing wounds should be boiled for 20 minutes to make it aseptic (sterile). After water has been thus rendered aseptic, if it is put into a receptacle not surgically clean it will become contaminated, as would also be the case if a hand which was not surgically clean was dipped into it.

In accidents which involve the breaking or cutting of the skin it is of the utmost importance to prevent the entrance into the wound of germs which would produce what is ordinarily known as blood poisoning, and first-aid work must take carefully into account the danger from this source.

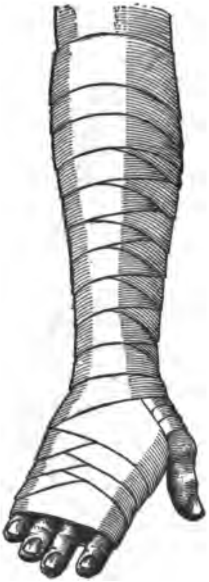

Fig. 13.—Roller bandage applied to the forearm.

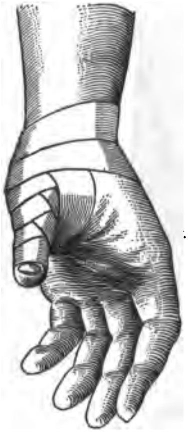

Fig. 14.—Roller bandage applied to the thumb.

The surface of the skin when unbroken prevents the entrance of these germs into the body, but even the smallest break may permit them to enter and set up an infected condition. A trifling injury may become the source of blood poisoning with gravest consequences, death having sometimes followed a scratch from an infected pin or finger nail.

The germs which cause infection are too small to be seen except through a powerful microscope and are to be found on the surface of our bodies, clothing, knives (or other objects which usually cause wounds), in water, or, in fact, on anything that has not been rendered what we call aseptic (surgically clean).

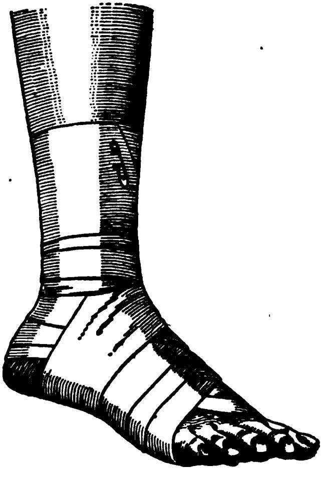

FIG. 15.—Roller bandage applied to the foot.

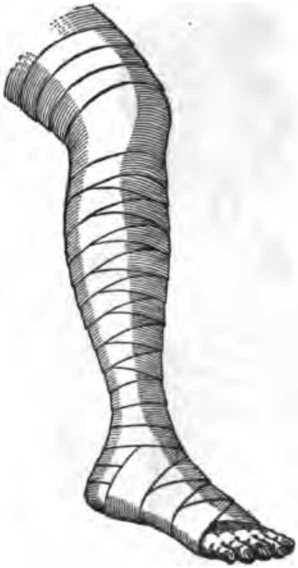

FIG. 16.—Roller bandage applied to the leg.

If germs do not obtain entrance into a wound, or only a few of them do, the wound will heal quickly, and there will be no inflammation; but should sufficient germs find lodgment there, pus (matter) will form, and the area around the wound will become red and angry looking.

Frequently the blood flowing from a wound will wash out the pus germs that have found an entrance, and for this reason a wound which bleeds freely is less liable to prove dangerous than one that does not.

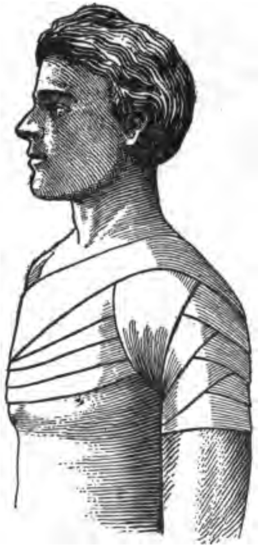

FIG. 17.—Roller bandage applied to the shoulder.

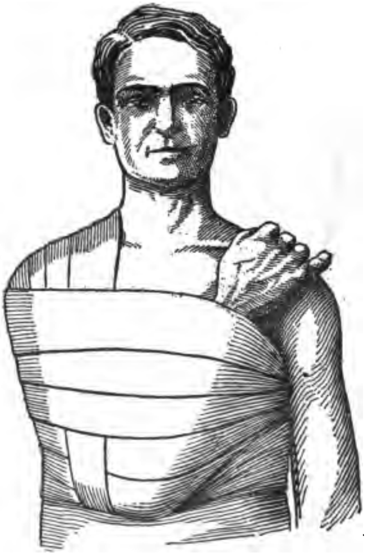

FIG. 18.—Roller bandage applied to make the arm immovable.

Deep wounds are much more liable to infection than others.

The local symptoms of infection in a wound are heat, redness, pain, and swelling in the neighborhood of the wound.

The general symptoms of infection consist of a chill or chilly feeling, followed by fever, sweating, a rapid pulse, and possibly diarrhea.

Should the infected wound be of the finger, hand, or arm, the glands in the armpit are liable to swell, causing what is commonly known as a waxen kernel. Should the wound be in the feet or legs, the glands in the groin are liable to be affected in the same way.

In case blood poisoning sets in, either as a result of infection at the time the wound was made or subsequently, there should be no delay in getting the patient to where the best medical attention can be given. A fatal result can sometimes only be averted by an operation. In any case a very serious condition has arisen when infection develops.

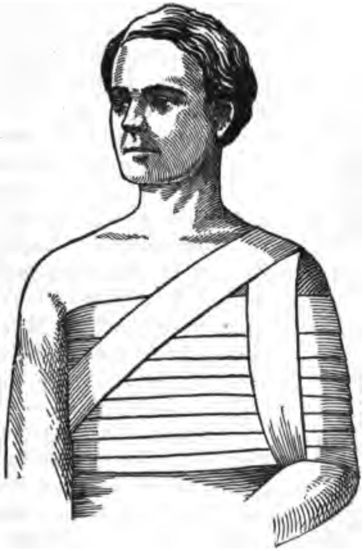

Fig. 19.—Roller bandage applied to the chest.

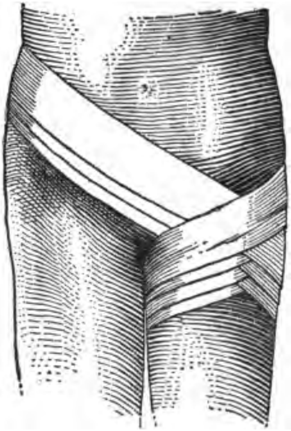

Fig. 20.—Roller bandage applied to the groin.

When a wound is found to be infected, and while the patient is being removed to the surgeon, the wound and surrounding skin should be kept as surgically clean as possible to prevent further infection, the wound treated with a

5 per cent solution of iodine, and scab formations prevented if possible.

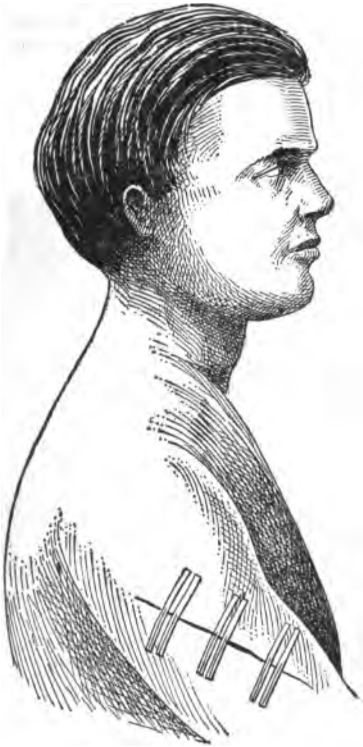

FIG. 21.—Edges of cut wound held together with adhesive plaster.

In dressing a wound, wherever possible the person administering first aid should be sure that his hands are surgically clean. Hands can not be made surgically clean by simply washing them in soap and water, no matter how carefully this may be done, but should be further washed in a solution of bichloride of mercury and water, 1 to 1,000, and the finger nails thoroughly cleaned by removing any deposits located under them, after which they should be scrubbed with this antiseptic solution, using a nailbrush.

Bandages and other material used in dressing a wound should not be uncovered until they are to be used and should never be laid on an unclean surface or allowed to touch, or be touched by, anything that is not surgically clean.

The pus from a septic (infected) wound is highly infectious, and great care should be taken against its transmittal from one person to another, or from one part of a person's body to another part. Any abrasion of the skin is sufficient to afford an entrance for pus germs. A mere pin prick from an infected pin, or a crack in the skin, may be sufficient to afford a lodging place for these germs.

Bandages or other dressings removed from an infected wound should be burned.

While any infection of a wound is to be prevented, if possible, it will often take place in spite of the best care that can be given in camp.

Persons in good health and those who are not addicted to the use of alcohol are less susceptible to infection than others. Bodily cleanliness and the wearing of clean clothing also lessens the danger of infection.

WOUNDS.

A wound is an injury in which the skin is broken and the underlying tissue more or less damaged.

There are many varieties of wounds:

- Incised (cuts), those caused by sharp instruments.
- Lacerated (torn), those caused by stones, clubs, or blunt instruments.
- Punctured, those caused by narrow, sharp-pointed instruments.
- Contused, those accompanied by more or less bruising of the adjoining or surrounding tissues of the body.
- Gunshot, may be either lacerated or punctured.
- Poisoned, those into which some poison has been introduced at the time the wound was received.

The great dangers from wounds are infection (the entrance of disease germs into the wound through a break in the skin), hemorrhage, and shock.

Disease germs are invisible to the human eye, but it is their action that causes so many wounds to become inflamed and full of pus or matter, producing blood poisoning, gangrene (death of the part), erysipelas, lockjaw, etc. Even the smallest scratches, if not properly cleaned and kept clean, may result in gatherings and abscesses which may cause a person to lose an arm or leg, or even his life.

Wounds in the region of the chest are often complicated by injuries to the lungs or stomach, which fact can be recognized by coughing, difficult breathing, and the spitting of blood. Wounds of the abdomen are especially dangerous if severe enough to injure the bowels or intestines.

Treatment.—Always expose a wound and examine it carefully. When clothing covers the wound it should be cut or ripped in order to obtain a view of the wound. The clothing should be turned back so that it does not touch the wound, as all clothing will naturally contain more or less impurities.

The wound and surrounding skin should be thoroughly disinfected with a solution of equal parts of tincture of iodine and alcohol. When the wound is covered with dirt or grease it can be cleansed by using a piece of gauze moistened with turpentine or alcohol.

As a rule, it is much safer temporarily to bind up a wound, dirt and all, than to touch it with unclean hands. Such a temporary dressing should, however, only be kept on until the injured person can be removed to a place where the wound can be properly cleansed.

In dressing an open wound, never touch it with the bare hands unless absolutely necessary. Never use a cloth or bandage that is not surgically clean, and never wash a wound in unclean water.

If the wound must be touched with the bare hands, cleanse the hands as follows: Bare the arms to the elbow, remove all rings from the fingers, and, using boiled water, scrub the hands thoroughly with antiseptic soap and dry them on clean gauze or lint. Pay particular attention to the finger nails. After washing the hands do not touch anything not surgically clean.

Never cover a wound with adhesive plaster, as in that way the disease germs are sealed up within it. Small strips of adhesive plaster should, however, be placed across very long cuts, etc., to hold the edges of the wound together (fig. 21).

In cases of wounds caused by foreign bodies, such as large splinters, bullets, etc., it is less dangerous to allow the foreign body to remain in the wound until the patient has reached a surgeon than it is to remove it. In removing a foreign body it is easy to start a serious hemorrhage by also removing from the wound a blood clot or by uncovering some large blood vessel to which the foreign body is acting as a plug.

Small splinters, thorns, fishhooks, etc., should be removed from the wound with tweezers which have been made clean by boiling in water. Then treat as an ordinary wound.

Sometimes a small wound caused by a rusty nail or some similar object penetrating the skin may result in lockjaw. Any wound of this character should be promptly shown to a doctor, even before any symptoms of the disease may present themselves. All such wounds as soon as received should be made to bleed freely by pressure, cleanly dressed like other wounds, and not sealed by plaster, collodion, newskin, or the like.

In order to have a wound heal promptly rest is essential.

Contused wounds.—Contused wounds may be of two varieties—one in which the skin is broken and the other in which it is not. They may be caused by a kick from a horse, a blow from a stone, a rolling log, or a wagon wheel passing over one.

If the injury is very severe, the patient may die on the spot from shock or loss of blood. In some instances, although serious injury may have been inflicted, there may be no outward evidence of the fact, the hemorrhage being internal and no blood being outwardly visible. In these conditions there is usually great shock, and the patient is apt to vomit and be very nervous.

In contused wounds, the blood vessels being injured, the vitality of the injured part is likely to be impaired or destroyed, causing the death of some of the tissues, and there is great danger of secondary hemorrhage occurring when this dead tissue separates from the living tissue, which usually occurs between the fifth and tenth day after the injury is received.

Gangrene (death of the part) also frequently follows this class of injuries.

In treating these wounds we must arrest hemorrhage, limit the inflammation, and try to promote the absorption of the blood or fluid contained within the wounded area.

All of these cases should be placed in the hands of a surgeon immediately. Until the surgeon can be reached, however, the patient must be kept absolutely quiet and, if necessary, stimulated, and the injured part should be kept constantly wet with a solution of one-half alcohol and one-half water.

Gunshot wounds.—In gunshot wounds there is a wound at the point of entrance of the shot, and frequently one or more wounds at the point of exit, if the bullet passes through the body.

When the shot is lodged under the skin it should never be removed by the first-aid man, but should be left where it is until a doctor can be reached.

In this class of wounds there will usually be great shock, which will demand proper treatment. (See "Shock," p. 57.)

Wounds of the abdomen.—In wounds of the abdomen, if the bowels are exposed, they should be kept warm and protected from the air, until surgical aid can be obtained, by cloths wrung out of hot salt water and changed with sufficient frequency to prevent the bowels from becoming dry. These cloths should be held in position by a broad bandage, which will aid them in retaining their warmth and at the same time offer some support to the abdomen.

Severe shock accompanies abdominal wounds and should be properly treated. (See "Shock," p. 57.)

BRUISES.

Always make a careful examination of the bruise to see if the skin is broken. If it is, treat as for wounds. (See "Wounds," p. 29.)

Treatment.—Slight bruises should have ice, or a wet cloth with very hot or cold water, or half alcohol and half water, applied to them.

In severe cases with great prostration, in addition to the above, the body should be kept warm, and hot drinks, preferably coffee, should be given. Rest is important in such cases.

In severe bruises of the back, strapping the parts firmly with strips of adhesive plaster, extending some distance in all directions beyond the bruised tissues, will often afford great relief.

When the arm is severely bruised it should be carried in a sling.

BLEEDING (HEMORRHAGE).

There is more or less bleeding from all open wounds, but unless some of the large blood vessels are injured the hemorrhage is not dangerous.

When the hemorrhage is of a dangerous character there will be faintness, with the face pale, skin cold, pulse weak, breathing irregular, and dizziness or loss of consciousness. Hemorrhage occurs from—

Arteries.—Bright red blood which comes in spurts (this form is the most dangerous); blood is lost very rapidly and an injured person may die in a very few minutes.

Veins.—Dark blue blood which flows in a steady stream.

Capillaries.—Blood slowly oozes out.

Treatment—Bleeding from the arteries.—Have patient lie down with head low. If the wound is in a limb, elevate the limb.

Apply pressure directly to the bleeding part or above the wound (between the wound and the heart) with the thumb or fingers. (For points at which to apply pressure see figs. 22 to 25.) Then substitute for this a tourniquet or compress, using only sufficient pressure to barely stop the bleeding (fig. 26).

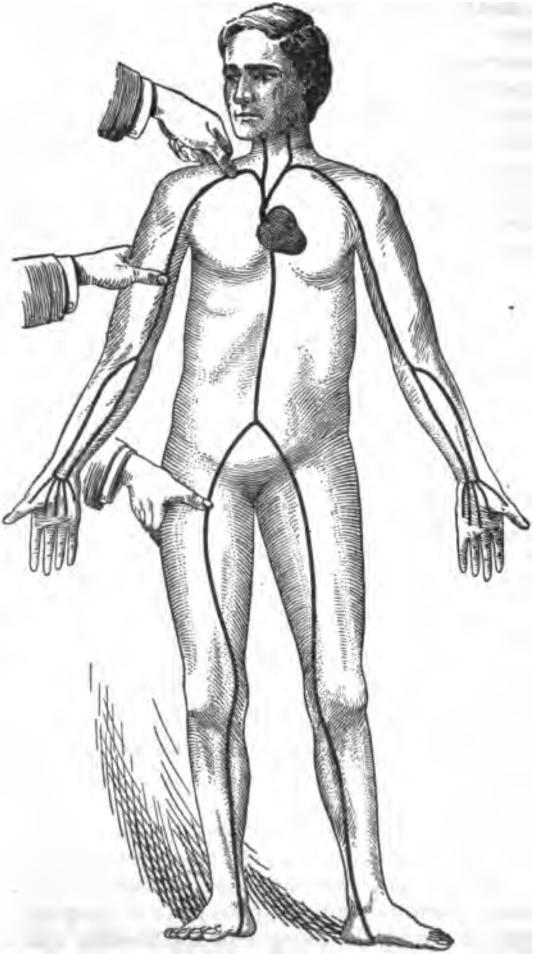

FIG. 22.—Points of pressure for controlling hemorrhage.

A tourniquet can be made by twisting a triangular bandage or handkerchief until it is ropelike; or a piece of rubber tubing, or suspenders, can be used.

If a tourniquet is kept in place an hour it should then be loosened, as the circulation of blood should not be cut off for too long a time. If no further bleeding occurs, the tourniquet should be allowed to remain loose, but quickly tightened should the bleeding recommence.

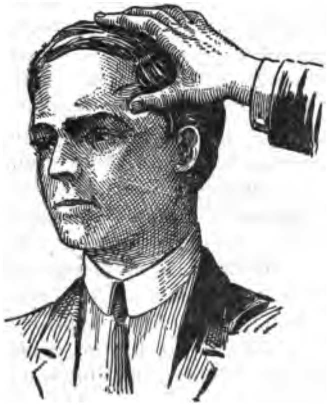

FIG. 23.—To stop bleeding at the temple.

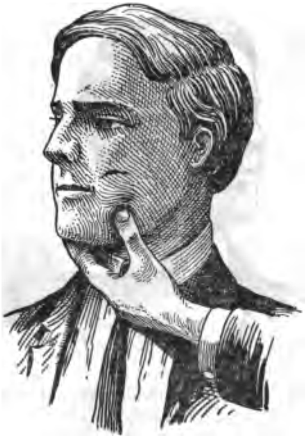

FIG. 24.—To stop bleeding of the cheek.

If the limb is badly crushed, put the pressure higher up than in the injured spot.

Bleeding from the veins.—Treat the same as for bleeding from the arteries, except that the pressure should be applied directly over the wound.

Loosen tight clothing, collars, belts, garters, etc., which may prevent the flow of blood to the heart.

Bleeding from capillaries.—Exposure to the air for a short time will often check this form of bleeding. If this does not check it, however, place a pad of gauze, soaked in hot water, upon the bleeding part, and bind tightly in place. Both heat and pressure are useful in controlling this form of bleeding.

An effective way to stop hemorrhage in the forearm or hand, lower leg, or foot, is shown in figures 27 and 28. A stick or pad of some kind is placed at the bend of the elbow or knee, and the joint bent and secured in the manner shown. Since all the large blood vessels of the parts beyond these joints pass directly to the back of the bones, where the joints bend, pressure applied in this manner will stop bleeding in the part of the limb beyond.

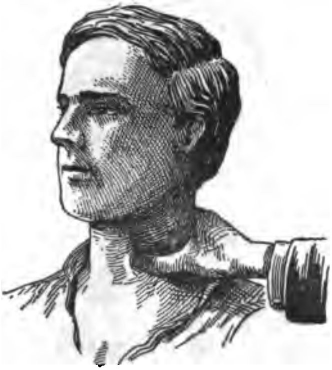

FIG. 25.—To stop bleeding of the neck.

Internal hemorrhage.—Have the patient lie down with the head low. Apply ice or cold cloths to the point from which the bleeding comes.

Nosebleed.—Have patient sit in an upright position with the head hanging back. Loosen collar and apply ice, a key, or any piece of cold metal to the back of the neck. If bleeding continues, snuff salt and water, or vinegar and water, up the nose (using a teaspoonful of salt or vinegar to a cupful of water), or plug the nostrils with cotton or gauze; or the patient may, if the case is not severe, close the nostrils by pressing the thumb or finger firmly against the opening until the blood has had time to form a clot and the flow into the throat has entirely ceased. Care should be taken not to remove the pressure too soon and not to discharge the clotted blood from the nostril by blowing the nose after the pressure is taken away.

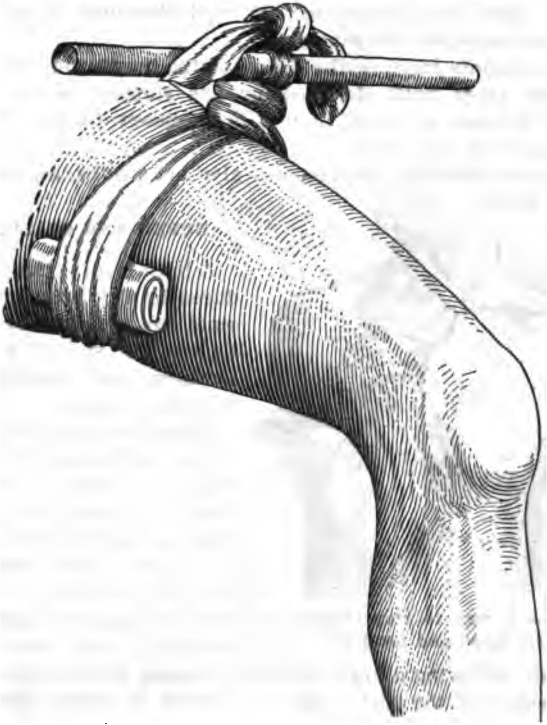

FIG. 26.—The way to use a tourniquet.

In all kinds of bleeding.—Keep the patient warm. Never wash away the blood clots—bind them up. To wash them away would start the bleeding afresh.

If the bleeding is from any of the blood vessels of the leg, raise the leg by putting a saddle, valise, or some other object under it; or, if from a blood vessel in the arm, elevate the arm as much as possible by using a sling. This will not only help to check the hemorrhage, but will also tend to relieve the pain caused by the wound.

As stimulants increase the action of the heart, they should never be given until the bleeding has stopped, unless the patient becomes so weak that it is necessary to give them to prevent him from dying.

When the bleeding has stopped, give hot drinks, as coffee, tea, or milk.

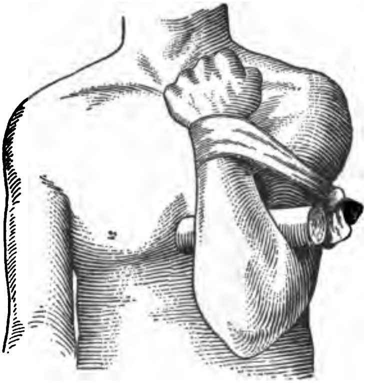

FIG. 27.—A way to stop bleeding of the hand and forearm.

BURNS AND SCALDS.

A burn is an injury produced by dry heat, and a scald one produced by hot liquids or steam. Both, however, are treated in the same manner.

Burns vary from only a slight reddening of the skin to those in which there is more or less charring or destruction of the parts. The seriousness of a burn or scald depends upon its extent, position, and severity. The pain following a burn is usually intense and is increased by exposure of the part to the air. Shock is usually present to a very marked degree.

Treatment.—The pain and shock should be promptly treated, the pain being controlled by the use of morphine if necessary (not over one-eighth grain at a dose or oftener than every two hours) and the shock by proper stimulation. (See "Shock," p. 57.) If a large surface has been burned, only a small portion should be exposed and dressed at a time.

Cut away the clothing, but avoid exposing the part to cold. In removing the clothing always cut it away, never pull or tear it. If the clothing sticks to the burn, moisten it with oil or water until it can be removed without using any force.

Exclude air by covering all of the burned surface with a paste made of water and baking soda (not washing soda), starch, or flour. Fresh lard, any fresh oil or fat, cream, vaseline, or carron oil (a mixture of equal parts of linseed oil and lime water) is equally useful. Take a cloth or bandage which has been smeared over with whichever of the above substances you have used on the burn, and cover the entire reddened surface with it. Then bandage the burned surface lightly, in order not to cause any pressure over the injury.

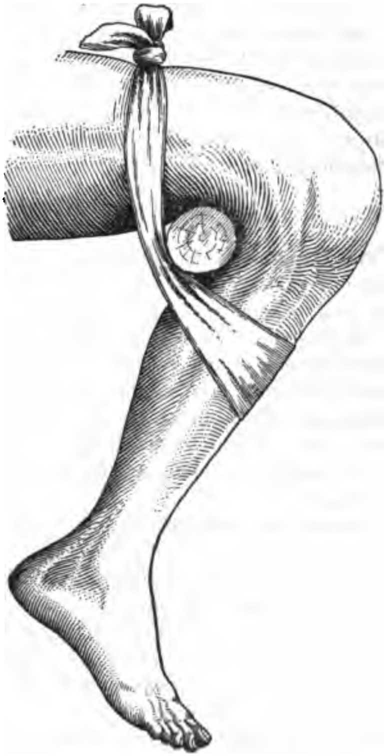

FIG. 28.—A way to stop bleeding of the foot or lower leg.

Salt water is an excellent application for burns, in the strength of a teaspoonful of salt to a pint of water. This is first poured freely over the burned area, which is then bandaged lightly, and the bandage saturated with the salt-water solution and kept moist by frequent applications of the same.

If blisters have formed, prick them with a *clean* needle, but do not remove any of the skin, as this forms a protection to the burned surface.

Never attempt to remove pitch, varnish, or wax from a burned surface.

Burns from electricity are treated in the same manner as other burns.

BROKEN BONES (FRACTURES).

The skeleton—the framework of the body—is composed of bones of various shapes and sizes. The bones of the head are flat and when fractured crack, as does an eggshell when it is broken. The bones of the extremities are long and when fractured are broken across in many ways, just as a dead limb of a tree might be. The bones of the wrist and ankle and those of the spine are irregular in shape and are rarely broken unless crushed. Injuries to the parts where these bones are located are more often dislocations than breaks.

Attached to the bones, by means of tendons, are the muscles. These have the power of contracting, and, by pulling the bones by means of their tendinous attachments, enable us to perform the various movements of our bodies. When a bone is broken it is this tendency on the part of the muscles to contract that pulls the broken ends of the bone in such a manner that they usually overlap each other, which results in a shortening of the injured part.

Bones, being more or less brittle, break when sufficient force is applied to them. The older a person grows the more brittle the bones become and, therefore, the more liable to be broken. Fractures may be caused by blows directly at the point of injury, or by a force applied at some other point, as where a person falling from a great height and landing on his feet fractures a bone in the thigh.

For the purpose of first-aid work the following varieties of fractures should be considered:

Simple, where the bone is broken without injury to the surrounding parts;

Compound, where the bone is driven through the skin and soft parts; and

Impacted, where the broken ends of the bone are tightly wedged together.

Fractures may be oblique, transverse, or longitudinal, oblique being the most frequent form.

When the bone is broken, unless there be an impacted fracture, it can no longer act as a support to a part nor can it withstand the contraction of the muscles attached to it; and, therefore, we have deformity and, in case of a fracture of a bone of a limb, more or less shortening of the part.

In fractures there will also be pain, abnormal or increased mobility, loss of function of the part, muscular spasm, and "crepitus."

Deformity is due to the swelling and displacement of the broken fragments of the bone.

Pain may be slight or quite severe. When the finger is passed over the fractured part of the bone or the injured limb is moved, a sharp, knifelike pain will be experienced by the patient at the point of fracture.

Abnormal mobility is the movement which can be obtained between the joints of a broken bone, at which point, under normal conditions, no movement could be obtained.

Muscular spasm is the involuntary contraction of the muscles in the region in which the fracture has occurred. It is intermittent, accompanied by pain, and likely to follow slight movements of the part.

Crepitus (a harsh grating which may be felt or heard when the two ends of the bone rub one against the other) would be absent in the case of an impacted fracture or where any of the soft tissues have been forced in between the broken ends of the bones.

Swelling and discoloration will usually appear soon after the injury, being due to the injury to the soft parts.

Where a fracture is suspected an examination should always be made as soon as possible before the injured part starts to swell. In making this examination compare the injured side with the uninjured.

All examinations should be made with extreme gentleness, placing the patient in as comfortable a position as possible and properly supporting the injured part.

It is often difficult to tell whether a bone is broken or not; when in doubt treat as if there was a break.

When one of the bones of the forearm or lower leg is broken and the other remains intact it is often difficult to detect the fracture, because the unbroken bone will to some extent preserve the general shape of the injured part.

A bone may be broken near or where it enters into the formation of a joint, in which case the injury might be mistaken for a dislocation, or a bone may be broken and at the same time dislocated.

When a bone is broken where it enters into the formation of a joint it is a very serious condition and one which should be handled with extreme care. The person rendering first aid should not attempt to reduce the fracture, but, moving the injured part as little as possible, should place light splints on all sides of the joint and apply cold, wet cloths.

If the injured person is wearing light clothing, it may not be necessary to remove this in order to make an examination, but if the clothing does have to be removed cut it along the seams rather than take it off. While this is being done the injured part should be firmly held in order to prevent further injury.

Treatment.—The aim in treating a fracture is to get the fragments of bone in their natural position and, having done so, to keep them there. In order to do this, two steps are necessary: First, to reduce or "set" the fractured bone and, second, to retain the bone in this position by means of properly applied splints. The methods by which this can best be done are described under separate subheadings in the following pages.

Nature repairs breaks in the bones by the formation of new bone at the point of fracture, and if the bone is put in its proper position and held there during the period of repair very slight, if any, permanent deformity will result.

In all cases of fracture treat the patient on the spot before removing him, as it is very easy for a simple fracture to be converted into a compound fracture. The latter is a more serious condition, not only because of the increased injury, but because a break in the skin affords a means of entrance for germs into the wound.

When a bone of a limb has been broken it will be necessary to extend the limb by pulling it, in which case the part of the bone above the break should be firmly held, the part below the break being pulled into place in a straight line.

In compound fractures, where there is an open wound, treat the bleeding and dress the wound before applying the splint or bandage. (See "Bleeding" and "Wounds.")

If the injured person must change his position, see that the broken bone is well supported and held in its natural position.

Never allow a person who has a broken limb to be moved until the part is properly splinted.

After a fractured bone has been properly put up in splints and bandaged, the bandage should not be removed until the case is placed in a doctor's hands, unless there is an open wound, in which case, if the doctor's services can not be obtained at least on the day following the receipt of the injury, the wound should be exposed and dressed as follows:

Remove the covering and wash the wounded surface carefully with a solution made by placing a bichloride of mercury tablet (7 grains) in a quart of hot water and allowing the same to drip on the wound from a *clean* cloth. Apply a fresh bandage.

If, however, there has been much bleeding from the wound, and a clot has formed, do not wash the wound but simply change the bandages, putting on clean ones.

Where a broken bone is associated with an open wound, apply splints in such a manner that the wound may be dressed, if necessary, without removing the splints.

Shock will probably be present in all serious cases of fracture and should be treated as suggested under that heading.

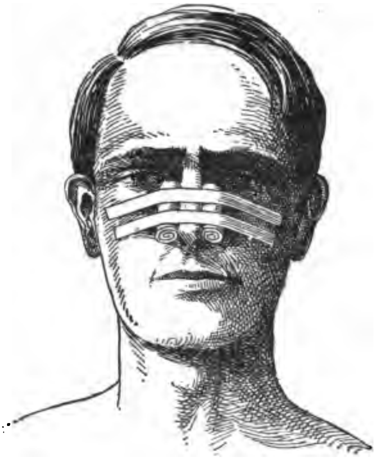

FIG. 29.—Dressing for a fracture of the nose.

Fracture of the nose.—Put the bones in as natural a position as possible by manipulation with the fingers over the seat of the fracture. Hold in place with strips of adhesive plaster across the nose from cheek to cheek. Before applying the plaster put a small pad of cloth on each side of the nose. Do not pull the plaster too tight or the nose will be flattened (fig. 29).

Since fracture of the nose is frequently accompanied by great swelling, due allowance should be made for this. Such swelling can be reduced by the use of either very hot or very cold applications.

If the fractured bone is depressed, the fracture may be corrected by inserting in the nostril a stick wrapped with clean cotton and applying gentle pressure at the seat of the fracture, afterwards packing the nostrils firmly with clean gauze.

Often there is profuse hemorrhage at first, which subsides of its own accord, but should this continue for any length of time it will be necessary to pack the nostrils with gauze.

Fracture of the lower jaw.—Gently put the loose bones in place and bring the lower against the upper teeth. Support in this position by two bandages, one from the under jaw over the top of the head, and the other from the front of the chin to the back of the head, then brought horizontally to the forehead and tied there. (Fig. 30.)

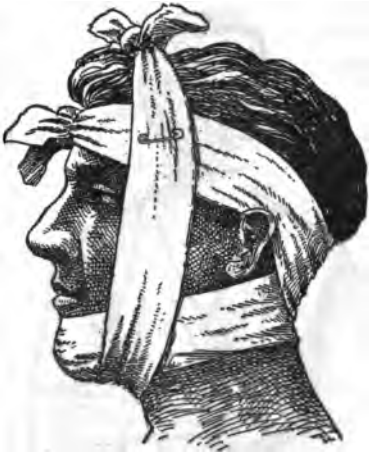

FIG. 30.—Dressing for a fracture of the lower jaw.

Loose teeth and pieces of bone should not, as a rule, be removed.

The patient should be given only liquid food until the parts of the bone have reunited. The dressing should be changed every two or three days.

Fracture of the collar bone.—Lay the patient on his back on a hard surface, with a folded blanket under the injured shoulder.

Make a pad of any soft material (a folded towel, etc.), and place it in the armpit on the injured side. Then put the arm in a sling, with the forearm at right angles to the upper arm. Then take a 3-inch bandage and put it horizontally around the body and the arm on the injured side at the elbow, encircling the elbow, the bent arm, and the body. When tied, by pulling the elbow to the body, it should force the broken ends of the bone together (fig. 31).

Fracture of the ribs.—The patient may lie upon the uninjured side or upon his back, or he may stand up, but in any position he assumes, the head and chest should be elevated, in order to prevent any interference with breathing.

Bandage the chest with a broad binder of stout linen or muslin, which, by restricting the respiratory movements, relieves the patient's discomfort. But as this also restricts the respiratory movements of the uninjured side of the chest, it should be left in place no longer than is necessary.

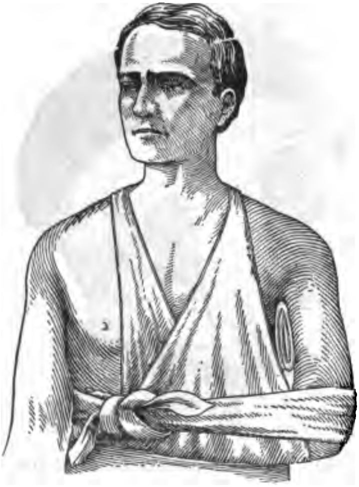

FIG. 31.—Dressing for a fracture of the collar bone.

If the patient is to be transported any distance, put long, wide strips of adhesive plaster on the side of the chest where the break is located. These should be applied snugly, beginning at the lower part of the chest and going up, each strip being parallel to the ribs and overlapping the one below, and should extend from the spinal column to the middle of the breast bone (fig. 32).

The strips of adhesive plaster should not be removed unless they cause the patient pain through not having been put on properly, in which event they should be removed at once and the injured side restrapped.

Fracture of the shoulder blade.—Reduce the deformity by manipulation and place a compress over the seat of the fracture. The compress should be held firmly in position with adhesive plaster, and the arm on the injured side should then be fixed against the chest and bandaged in that position in such a manner as to render it immovable.

Fracture of the spine (broken back).—Do not move the patient more than is absolutely necessary. Moving may prove fatal; but if it has to be done, merely raise him carefully, keeping the body in the same position in which it is lying (do not bend the spine), and slide a stretcher beneath him. Even turning him to one side or on his face may prove fatal. If the patient is cold, apply heat to his body.

Get a doctor to the patient as soon as possible.

Fracture of the upper arm.—Gently straighten the arm so as to put it in its natural position. Pad the arm well and apply two splints, one at the back of the arm reaching from the shoulder to the elbow and the other in front reaching from the armpit to the elbow, bandaging firmly. Place the forearm in a sling, with the hand slightly higher than the forearm, and bind the upper arm to the side of the chest with a wide bandage (fig. 33).

Fracture of the forearm.—There are two bones in the forearm extending from the elbow to the wrist, either or both of which may be broken.

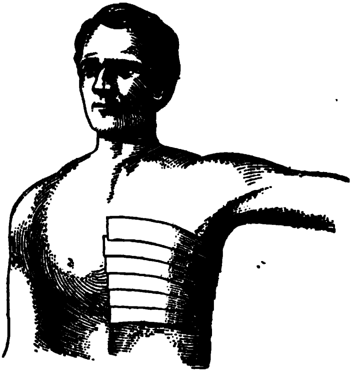

FIG. 32.—Strapping for a fracture of the ribs.

Firmly bandage in well-padded splints extending from the elbow to the tips of the fingers on the outer and inner sides of the arm, and place the forearm across the chest, the palm of the hand turned in and the thumb up, and support with a sling (fig. 34).

Fracture of the hand.—Treat the same as a fracture of the forearm (fig. 34).

Fracture of the finger.—Gently place the fingers in their natural position. Apply a splint under the finger, extending from the tip of the finger to the wrist, held in place with strips of adhesive plaster, and bind firmly with a narrow bandage (fig. 35). Support the hand in a sling. See a doctor as soon as practicable.

Fracture of the thigh.—Lay the patient on his back with head and shoulders slightly raised, and gently draw the injured leg out straight.

A long splint extending from the foot to the armpit, which should be firmly bound to the chest as well as to the injured limb, is required for the outside splint, in order to prevent any movement of the injured thigh (fig. 36).

An inner splint should be applied from the crotch to the foot, or both legs should be tied together above and below the knee.

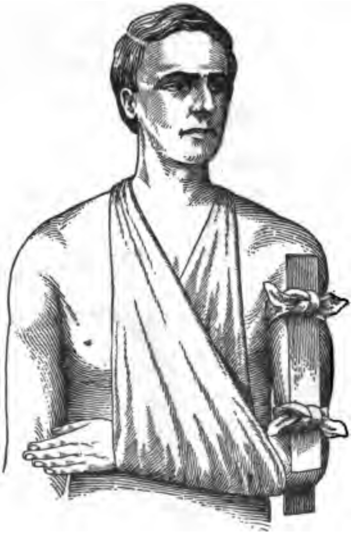

FIG. 33.—Dressing for a fracture of the upper arm.

Fracture of the knee-cap.—Lay the patient on his back, with the injured leg slightly elevated.

Apply a splint (long enough to extend from below the heel to the middle of the thigh) to the back of the thigh and leg opposite the bend of the knee. Bind the splint at the ankle and thigh, also above and below the knee, being careful not to put a bandage over the break (fig. 37). Put an extra amount of padding back of the ankle in order that there may be no pressure on the heel.

Fracture of the lower leg.—There are two bones in the lower leg, a large one in front, extending from the knee to the ankle, and a smaller one slightly to the back of and out from the former. Either or both of these may be broken.

Lay the patient on his back and take a pillow (a sack stuffed with straw or a blanket rolled so as to make a trough will also do) and gently place the injured leg on it, not allowing the toes to turn out, but supporting them in the same position as the toes of the uninjured foot, at the same time keeping the foot at a right angle with the leg (fig. 38).

Three splints should be applied outside the pillow, one on each side and one at the back of the leg, extending from below the foot to above the knee, and bandaged firmly, the foot still being kept at a right angle with the leg. When the patient is to be moved, bandage the splinted leg to the other leg.

DISLOCATIONS (BONES OUT OF JOINT).

A dislocation is a displacement of one or more bones which enter into the formation of a joint.

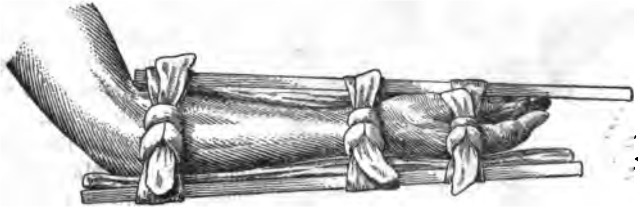

FIG. 34.—Splints for a fracture of the bones of the forearm.

A joint is where the ends of two or more bones meet and are held in place by ligaments (strong bands of tissue). The joints in man are similar to the joints of an animal, and a person who has seen an exposed joint of an animal can understand the general make-up of the joints of the human body. Right at these joints are located the main arteries, veins, and nerves supplying those portions of the limbs beyond the joint. When the bones are dislocated, some of the ligaments are always stretched or torn, and injury is often done to the arteries, veins, and nerves. For this reason, too much force should not be used in reducing a dislocation, as serious damage may result. The first-aid man should never attempt to reduce any dislocation except one of the lower jaw, fingers, thumbs, or shoulder, and the last only when it is easily reducible by the method herein outlined.

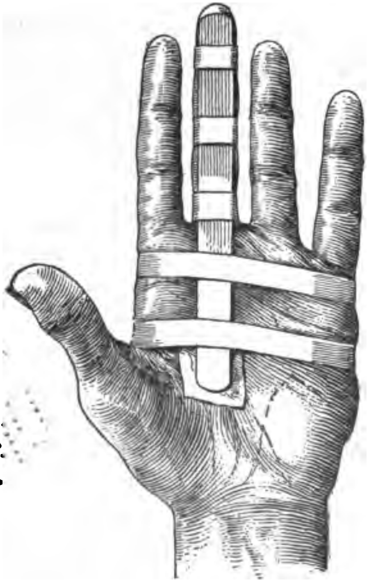

FIG. 35.—Splint for a fracture of the finger.

The chief signs of a dislocation are deformity and loss of function. While in fractures there is an increased mobility of the parts, in dislocations the mobility is greatly reduced. There is usually pain of a sickening character located at the joint, and the limb beyond the injury may be numb.

Treatment.—Ordinarily, the first-aid worker should not attempt to reduce a dislocation, but should make the limb immovable and place it in such a position that no damage will result, and the patient be made as comfortable as possible while being transported to the doctor.

Do not manipulate the joint in any way, as this might tear or injure the arteries, etc., resulting in an injury beyond the power of the first-aid man to remedy. Manipulation of the joint might leave the injured person crippled for life or possibly cause his death.

Since the reduction of a dislocation often taxes the skill of the most experienced surgeon, a nonprofessional man can not expect to succeed in every case. Should much difficulty be experienced in reducing a dislocation, do not persist in the effort, but get the patient to a doctor as soon as possible. In such a case, cover the injured joint with cloths saturated with very hot or very cold water, in order to keep down pain and swelling until the doctor can be reached.

After the dislocation has been reduced, place the part in a well-padded splint and keep it there for at least a week.

Dislocation of the lower jaw.—Both thumbs of the first-aid man should first be wrapped in several layers of cotton to prevent their being bitten when the jaws snap back in place.

The thumbs should then be placed on the lower back teeth on each side and, with the fingers seizing the lower jaw outside under the cheek bone, pressure should be applied up under the chin and down on the back teeth. As soon as the jaw starts into place remove the thumbs quickly.

After the dislocation has been reduced, bandage the jaw.

Figure 39 illustrates the position of the lower jaw when dislocated and shows how pressure applied as above directed will bring it into its natural position. Figure 40 illustrates the method of holding the jaw to reduce the dislocation.

Dislocation of the shoulder.—To reduce this dislocation have the patient lie down flat on his back. The first-aid man should then remove his own shoe and set himself opposite the

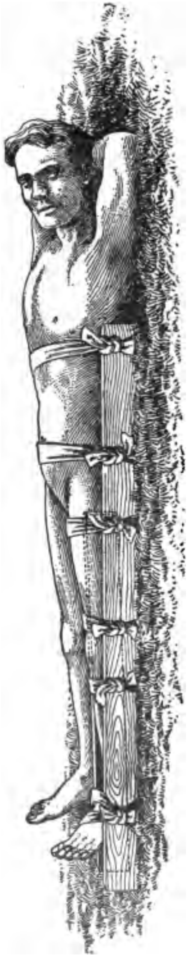

FIG. 36.—Splints for a fracture of the thigh.

patient on the injured side, placing his heel in the patient's armpit. He should then grasp the wrist and draw the dislocated arm downward and toward the uninjured side, at the same time pressing outward and upward with the heel. As soon as the end of the bone is free it will snap back into place.

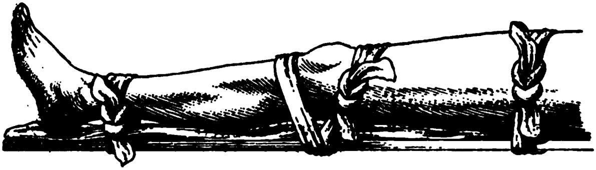

FIG. 37.—Splint for a fractured kneecap.

After the dislocation has been reduced, bandage the arm to the side, with the forearm carried across the chest, the hand being placed on the opposite shoulder. The reduction of this dislocation is always attended with danger, and it is advisable to have it made by a surgeon wherever possible.

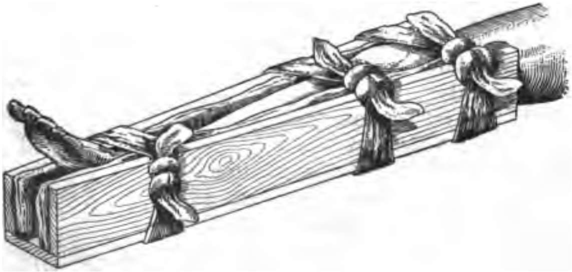

FIG. 38.—Splints for a fracture of the lower leg.

Figure 41 shows a dislocated shoulder and one in its natural position. It can be seen how gentle force applied as above will bring the head of the dislocated bone into its natural position in the socket of the other bone.

Dislocation of the finger and first joint of the thumb.—Grasp the dislocated finger firmly, pulling it in a line with the hand, and when fully extended make pressure on the head of the bone.

After the dislocation has been reduced, place the finger in a well-padded splint and keep it there for at least a week.

Figure 42 shows how gentle pressure applied as just directed will bring the ends of the bones into their natural relationship with each other.

Dislocation of the second joint of the thumb.—To reduce this dislocation, push the end of the thumb upward and backward until it stands perpendicular on the bone from which it is dislocated; then press the base of the dislocated bone forward, sliding it on the bone beneath until it reaches the end. Then bend the thumb into place and bandage. The bandage should be kept on for at least a week.

Figure 43 shows how gentle force applied as just directed will bring the ends of the bones into their natural position.

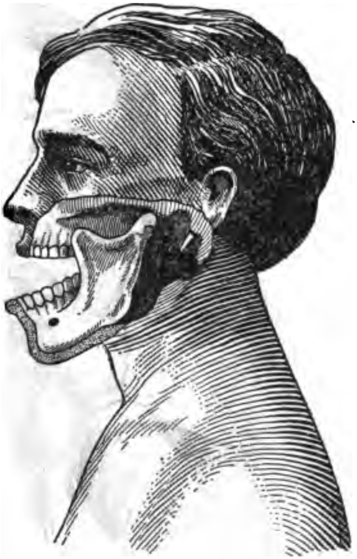

FIG. 39.—Dislocation of the lower jaw.

SPRAINS.

Sprains are injuries to joints and are apt to be very serious, as the ligaments may be torn and twisted and blood vessels broken.

Examine the wound, and if the skin is broken treat as directed under "Wounds."

Treatment.—Absolute rest of the joint is necessary to prevent further injury. Elevate the joint, when possible, and apply heat or cold. The first application may increase the pain, but after an hour or so should begin to relieve it.

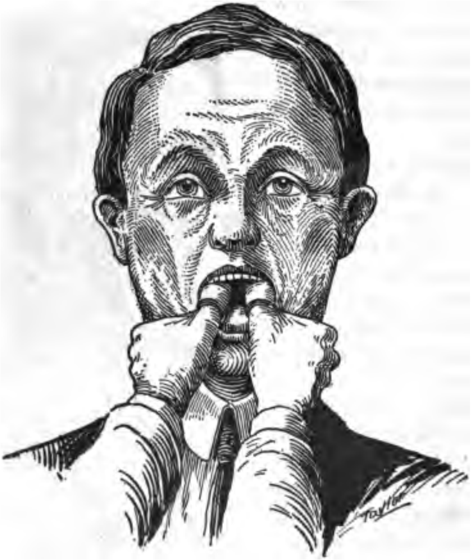

Fig. 40.—Reducing a dislocated lower jaw.

If the sprain is in the ankle or foot, place the foot for 15 minutes in a bucket of water as hot as can be borne, adding more hot water from time to time. Then apply a firm bandage and keep the foot elevated, removing the bandage from time to time and repeating the hot foot bath. If hot water can not be obtained, use cold water in the same manner. If the ankle joint is sprained, after two or three of these baths strap it firmly with adhesive plaster, as shown in figure 44.

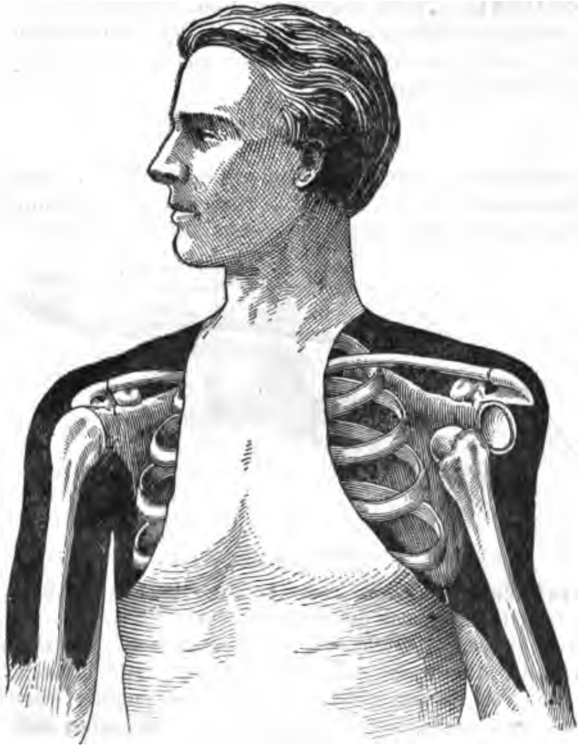

FIG. 41.—Dislocation of the left shoulder, with the bones of the right shoulder in their natural position.

STRAINS.

Strains are injuries produced by overstretching a muscle.

Treatment.—Strains require, at first, absolute rest of the part and gentle rubbing (toward the body) with alcohol and water. Later, harder rubbing and gentle movements will make the muscles more supple.

RUPTURES.

A rupture is a tear in the muscular wall of the abdomen, usually caused by some strain. Through this opening the bowels protrude, the skin usually remaining unbroken.

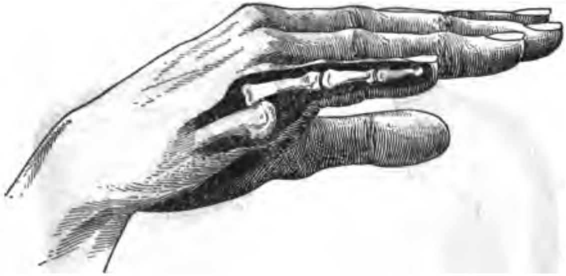

FIG. 42.—Dislocation of a finger.

Treatment.—Place the patient on his back with the knees well raised up toward the abdomen; support the legs in this position and apply cloths wet with cold water over the rupture. When the bowels have ceased to protrude, bandage the abdomen and thighs tightly. Handle the rupture with the greatest gentleness, as the lump contains intestines and any rough handling is apt to produce serious and permanent injury.

SHOCK (PROSTRATION).

Shock is a condition of profound prostration, caused in many cases by serious injury, particularly gunshot wounds and extensive burns, or possibly by extreme fright. It may be slight and transient or profound, and may even result in death.

In mild cases there may be only a pale face and a weak, rapid pulse, with slight nausea and general weakness. In extreme cases there is pallor and coldness of the skin, which is covered with cold perspiration; the pulse is weak or not perceptible at all, the fingers bluish in color, the nose shriveled, and the eyes deeply sunk in the head, the whole appearance greatly resembling that of death. The victim may also be insensible to pain.

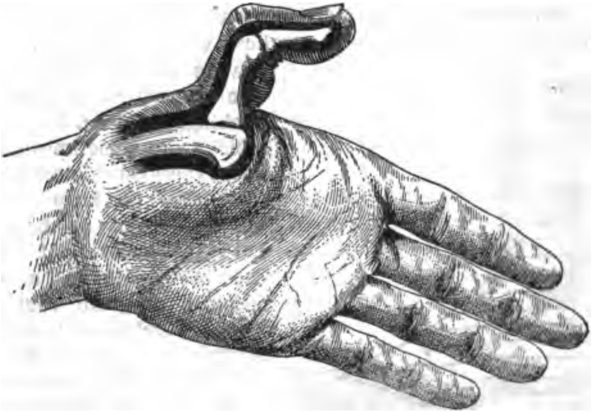

FIG. 43.—Dislocation of the thumb. (Second joint.)

Cases in which recovery takes place usually change for the better within an hour or two, the patient gradually resuming his normal condition. However, even after the patient appears to be getting better, there will be for some time great danger of death from hemorrhage (should the shock be the result of a wound) or of a sudden failure of the heart's action. For this reason the patient should be carefully watched for some time.

Treatment.—Keep the head somewhat lower than the body, with the limbs slightly elevated, in order that more blood may flow to the brain. Apply warmth to the surface of the body and, as soon as the patient can swallow, give as a stimulant one-half teaspoonful of aromatic spirits of ammonia in water or 1/60 of a grain of strychnine sulphate. A small amount of hot coffee, hot water, or hot milk may be given, which may be repeated every 15 minutes for the first hour. Ordinarily, it is better not to remove a patient suffering from shock until he has revived, but treat him at the place where the injury is received.

In attempting to stimulate persons suffering from shock never try to force them to swallow while unconscious, but always wait until they can swallow without danger of choking. Brandy and whisky are sometimes given under these conditions, and as the value of brandy and whisky depends on the alcohol they contain, if these are not available, a teaspoonful of grain (but not wood) alcohol with a teaspoonful of water will frequently serve the purpose.

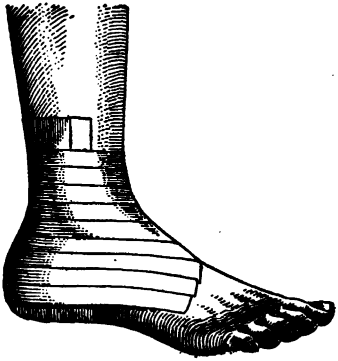

Fig. 44.—Strapping with adhesive plaster for a sprained ankle.

In very desperate cases artificial respiration may be resorted to (see "Drowning," p. 61), but its value is somewhat doubtful. However, it should be tried, as it can do no harm and may be the means of saving life.

ELECTRIC SHOCK.

It is impossible to tell at first whether or not a person has been killed by an electric shock. Persons apparently dead from this cause have often been revived by persistent treatment.

Treatment.—Loosen the clothing around the neck, chest, and abdomen, and place the patient on his back with a rolled-up coat, small log, or some other object of a similar shape under his shoulders so as to throw the chest up, and practice articificial respiration (see p. 64) until the patient begins to breathe of his own accord.

The patient should be covered with a dry coat or blankets, and as soon as he begins to breathe, but not before, his limbs should be well rubbed, under the blankets, toward the heart.

When the patient is partly restored, he frequently has a chill and vomits. Should he vomit while on his back, turn him on his right side so that the vomited matter will not get into his windpipe.

When sufficiently revived, the patient should be put to bed, well covered, and surrounded with hot bottles, leaving the windows of the room or the flaps of the tent open so that he may have plenty of fresh air. He may then be allowed to sleep quietly.

The patient is usually very nervous and should have absolute rest until he recovers from this condition, taking no food for several hours except hot beef tea or hot coffee, which should be given as soon as he can swallow.

Burns from electricity are treated in the same manner as other burns.

HEAT PROSTRATION (SUNSTROKE).

Sunstroke is an illness produced by exposure to excessive heat. This exposure causes either one of two conditions—heat stroke or heat exhaustion. As the causes, symptoms, and treatment of each of these conditions differ vastly, they will be considered separately.

Heat stroke.—Heat stroke is due to direct exposure to the sun's rays and may come on very suddenly, the patient dying almost instantly, or there may be headache, dizziness, nausea, vomiting, and a very high elevation of temperature, with a cessation of sweating. The face is red and flushed. In this condition convulsions may occur.

Heat stroke is more often experienced by those in a run-down condition or who have been drinking alcoholic liquors before being exposed to the sun's rays.

Treatment.—The object of the treatment is to reduce the temperature as rapidly as possible. Remove the patient to a cool and shady spot and loosen all of the clothing, removing as much of it as possible. Then apply cold to the head and body (either cold water or ice), which should be discontinued when consciousness returns, but again applied should the body become very hot.

Stimulants should be given, if at all, in very small quantities.

Heat exhaustion.—Heat exhaustion is a condition brought on by a hot, close atmosphere, the victim not having been exposed to the direct rays of the sun. The patient in these cases will feel depressed and weak. The face will be pale and covered with sweat, the pulse rapid and weak, and the body will feel cold to the touch.

Treatment.—In these cases it is necessary to stimulate the person. The patient should be removed to a cool place and made comfortable in a lying-down position, the body covered with blankets, and heat applied to the extremities. In a more serious case it may be advisable to apply mustard plasters over the region of the heart and to the feet.

SUFFOCATION.

Unconsciousness from suffocation is due to the cutting off of the supply of oxygen to the lungs. This may be caused by the inspired air being full of gas or smoke, by a pressure around the neck with a rope or fingers, by drowning, etc.

Treatment.—The treatment consists of removing the cause and restoring breathing by artificial respiration. (See "Drowning," p. 61.)

In cases where persons are overcome by smoke, remove them to the nearest point where the atmosphere is clear and perform artificial respiration.

When the patient is fully conscious and able to swallow without choking, give stimulants if necessary.

DROWNING.

Anyone who goes into the water to rescue a drowning person should first remove as much of his clothing as he has time for, but in any event his shoes. If his drawers are tied around the ankles they should be loosened, since otherwise they will fill with water and tend to drag him to the bottom.

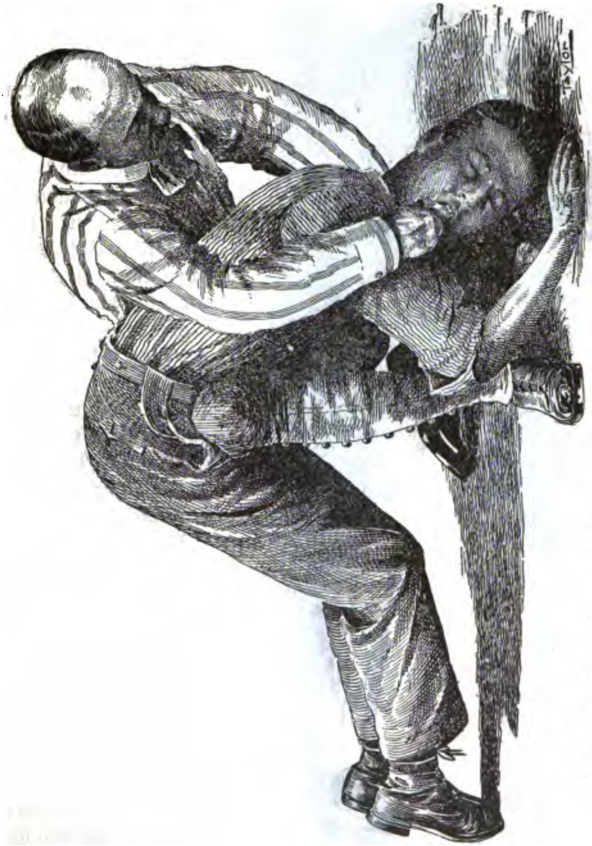

FIG. 45.—Emptying water from the lungs and stomach of a drowned man.

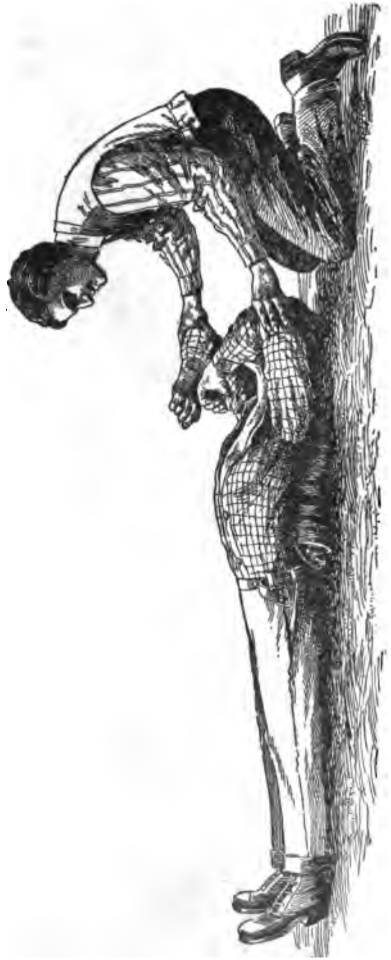

Fig. 46.—Sylvester's method of artificial respiration. First movement.

Approach the person to be rescued from behind, grasp him by the hair, and turn him quickly so as to throw him on his back. This will cause him to float. Then throw yourself on your back and, pulling the rescued person on your chest, hold him tightly with one hand and swim for the shore, unless there is a strong outsetting tide. In the latter case it is better to float until help comes than to become exhausted by trying to battle against the current.

Do not let the drowning person get a dangerous hold upon you. If necessary, duck him under the water until he becomes unconscious.

After a person has sunk in smooth water, the body may be located by bubbles which occasionally rise to the surface and may be rescued by diving for it.

Treatment.—In reviving a person who has been submerged in water, the aim is to restore the respiration and stimulate the action of the heart. It should be remembered that a person may appear to be dead who is really alive, although the body may have been in the water a considerable time.

The first thing to do is to bring the rescued person's body entirely out of the water and remove the mud, water, sand, etc., from the mouth with a handkerchief or the fingers. Wipe the mouth and nostrils dry, turn the face toward the wind, if any is blowing, rip the clothing so as to expose the chest, and give it several quick, smarting slaps with the open hand to try to make the patient gasp.

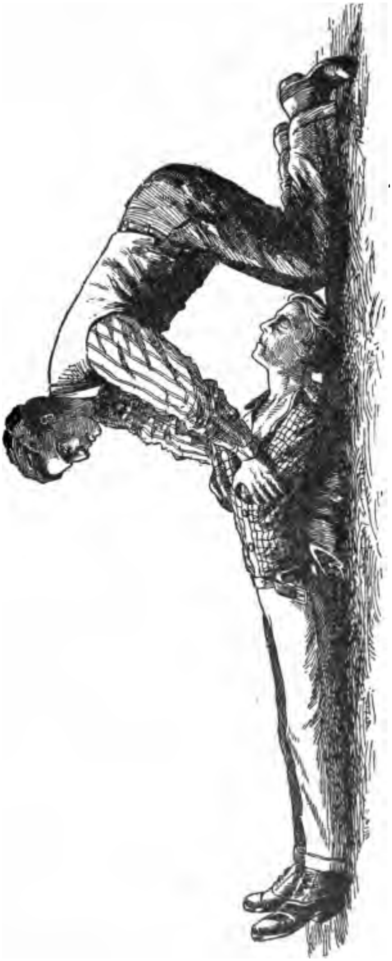

FIG. 47.—Sylvester's method of artificial respiration. Second movement.

If the patient does not revive, he should immediately be turned on his face and then raised by the middle and placed across the knee of the rescuer, and his tongue drawn out and held, as shown in figure 45. He should be kept in this position until the water flows out of his throat and lungs. Next, turn the patient on his back, pull out the tongue by passing a finger to the back of it, and if anyone else is present, have him hold it, or, if the rescuer is alone, tie it in this position by passing a cloth around the tongue and under the chin, thence to the back of the neck, where it should be tied, and start artificial respiration, which should be kept up from one to four hours. Sylvester's method, a description of which follows, is the best and most practical.

ARTIFICIAL RESPIRATION (SYLVESTER'S METHOD).

Place the patient on his back, loosen all clothing, and put a pad (a rolled coat or something of a similar nature) under the shoulders without allowing the head to hang too far back. Then kneel above the patient's head and grasp the arms above the elbow, drawing them outward and upward until extended straight above the head (see fig. 46). Hold them in this position for about two seconds or while counting three slowly. This movement expands the chest and allows the air to rush in. Then bring the arms down until the elbows press against the side of the chest (see fig. 47), exerting a slight pressure on the chest walls in order to aid in expelling the air taken in by the lungs during the previous movement, maintaining this position for about the same length of time as in the first movement.

These movements should be performed about fifteen times a minute, *not oftener*, and should be continued for at least four hours, or until the strength of the rescuers has been exhausted. Smelling salts or ammonia may be held under the nose if available.

The wet clothing should be removed and the patient rubbed dry and wrapped in a dry blanket as soon as possible, but if the rescuer is alone nothing else should be done until respiration has been started.

If two or more persons are present at the time of the rescue, the clothing can be removed and the patient wrapped in a blanket by one person while the others are performing artificial respiration.

As soon as the patient begins to breathe of his own accord, but not before, the arms and legs should be rubbed *toward the heart*, under the blanket, to help restore the circulation. The patient should then be put to bed, well covered, and surrounded with hot bottles, and the windows of the room or flies of the tent opened in order that he may get all the fresh air possible. When he can swallow, give him stimulants and hot drinks in small quantities at a time.

It may happen that after respiration has been restored the patient may suddenly stop breathing. For this reason the patient should be watched, and if this occurs artificial respiration should be resumed immediately.

FROSTBITE.

In frostbite the frozen part is at first red and painful, later becoming hard and white, the pain ceasing. The danger of this condition is that by sudden thawing of the part a change is brought about which results in gangrene, or death of the part.

Treatment.—The object of the treatment is to gradually bring the frozen part to its normal temperature. Never use heat. Rub the frozen part with snow, pieces of ice, or cold water. In case the frostbite is old and the skin has turned black or begun to scale off, do not attempt to restore its vitality by rubbing, but apply carron oil on absorbent cotton; then wrap the part loosely in flannel.

POISONING.

DRUG POISONING.

In treating cases of poisoning from drugs we should try, first, to get rid of the poison; second, to administer an antidote; and, third, to relieve such symptoms as may appear.

Vomiting to get rid of the poison should be produced if possible.

In poisoning by acids, give ammonia and water, soap, lime chalk, whitewash, wood ashes, or limewater.

In poisoning by arsenic, rat poison, or Paris green, give beaten-up eggs, castor oil, sweet oil, limewater, large drafts of hot, greasy water, or salt and water, lime which may be scraped from the walls or ceiling, white crayons, or tooth powder.

In poisoning by bichloride of mercury, give raw eggs and milk and castor oil, followed by an emetic. Stimulate the patient.

In poisoning by opium, morphine, or laudanum give permanganate of potash or ammonia with strong coffee. Keep the patient awake, walking him around the room, slapping his face, or doing such things as will prevent his going to sleep. If necessary use artificial respiration.

In poisoning by strychnine give tannic acid, or large doses of powdered charcoal, to be followed by an emetic. Keep the patient absolutely quiet.

PLANT POISONING (POISON IVY, POISON OAK, AND POISON SUMAC).

Poison ivy is also known as poison vine, three-leafed ivy, poison creeper, mercury, black mercury, markry, markweed, and pickry; **poison oak** as poison ivy, yeara, and California poison sumac; and **poison sumac** as swamp sumac, dogwood, poison dogwood, poison elder, poison ash, poison tree, poisonwood, poison swamp sumac, and thunderwood. These plants produce an eruption on the skin which is too familiar to necessitate a description. The eruption is spread by rubbing the affected area and then touching healthy skin.

Treatment.—Dissolve powdered sugar of lead in a solution of one-half alcohol and one-half water until no more of it will easily dissolve. This solution should then be well rubbed over the affected area, and the operation repeated several times a day, whenever the itching is noticeable, until the affection has disappeared. Treatment should be started as soon as possible after contact with the plant.

If this solution is not available, the exposed part should be washed thoroughly with soap and hot water.

INSECT POISONING.

Bites and stings.—Bites of poisonous insects, though very painful, are seldom dangerous.

Treatment.—Should the sting of the insect remain in the wound, it should be forced out.

Ammonia water should be applied at the point where the sting entered the flesh, after which cloths wet with cold water, a mild antiseptic solution, or wet salt should be applied to the bite.

SNAKE BITE.

Quick action is important.

Treatment.—Tear open the clothing to expose the wound and quickly tie a handkerchief, rope, strap, or anything around the limb, above the wound, drawing it tight enough to stop the circulation. Take a knife and open the hole made by the snake's fangs, passing the blade down into the wound and cutting outward and lengthwise rather than around the limb.

Let the blood flow, and at the same time rub the wound with the finger to dislodge any of the poison which remains;

then rub into the wound slightly moistened permanganate of potash.

A good plan is to suck the wound to extract the poison, for unless one has cuts or abrasions about the mouth there is no danger from the poison thus taken, provided it is spit out promptly and not swallowed.

Leave the handkerchief, or whatever you have used to stop the circulation of the blood, in place as long as you can; but after an hour it should be loosened a trifle, as, if the circulation is cut off for too long a time, mortification or death of the part will set in. If the patient is not greatly affected by the poison, it may later be removed entirely; but if the poison begins again to seriously depress the patient, keep the bitten part tied off and take the chances of mortification.

Aromatic spirits of ammonia, 1/60 of a grain of strychnine sulphate, whisky, or brandy should be given at once and repeated as often as is needed to keep up the strength of the patient, but it is not necessary to give enough whisky or brandy to intoxicate.

RABIES (HYDROPHOBIA, MAD-DOG BITE).

A wound caused by the bite of a mad dog nearly always produces hydrophobia, a disease which develops some time after the wound has been received and is one of the most terrible of all diseases, being almost certain death unless proper treatment is obtained immediately after the person is bitten.

Bites of cats, skunks, wolves, foxes, badgers, etc., are also likely to cause this disease, and the same precautions should be taken as in the case of a dog bite.

Treatment.—Make the wound bleed as freely as possible by pressure, and then take a penknife, piece of iron, or some similar substance, heat it red hot, and apply to all the wounded surface.

Cover the wound with a clean bandage or compress, but under no circumstances with adhesive plaster or collodion, as to do so would seal the poison within the wound.

The victim should be rushed to a doctor with all possible speed.

Ptomaine poisoning.—(See "Stomach and Bowel Troubles," p. 77.)

DISEASES.

CARE OF THE SICK.

In caring for the sick, many things are as important as the actual giving of medicines, such as hygienic measures and proper feeding, the prevention of the infection of others often being as important as the actual care of the patient himself.

The object should be to surround the patient with the conditions most favorable to recovery. He should be made as *comfortable* as possible. Clothing should be loose. Care should be taken to keep him warm enough. He should have fresh air, with avoidance of direct draft. He should be protected from annoyance by insects or by glare of light in the eyes. He should be kept quiet and forethought used to put things that he may need within reach. The bed should be made as soft as possible, etc.

The patient should be fed lightly, but not starved. The food should be easily digestible. Meat, especially salt meat, should be avoided. Light feedings once in three hours are better than large quantities of food at the usual meal hours. An attempt should be made to have the food appetizing.

The patient's surroundings should be kept clean. The body of the patient should be sponged daily with water or alcohol and water, half and half. Only a part of the body should be bathed at a time, the remainder of the body being well covered with a blanket; and to prevent chilling, the part being bathed should not be uncovered any longer than is absolutely necessary.

In case of prolonged sickness the upper part of the thighs and the buttocks should be well rubbed with alcohol or alcohol and alum and powdered with some toilet powder, to harden the skin and prevent the formation of bed sores.

In giving medicine always read the label on the bottle at least twice, in order to prevent giving an overdose or a dose of the wrong medicine, which might cause injury or even the death of the patient. As a general rule a bottle of medicine should be shaken before pouring out the contents.

Hot water bottles or hot bricks or stones are frequently applied to the feet, legs, and other parts to warm the body. They should be wrapped in flannel and great care taken that the heat is not too great and the part burned.

In all fevers the food should be fluid or semisolid, so as not to overtax the digestive organs. The best foods to be given in fevers are milk, toast water, white of egg in water, beef or mutton broth, or pe[illegible] or burnt-flour soup.

Pure water can be given as often as desired. It should be cool enough to be palatable, but not ice cold.

As a general rule it is advisable to begin the treatment of acute illnesses by emptying the bowels.

The stools and urine should be immediately disinfected before they are thrown into the trenches. The vessel into which these are passed should likewise be thoroughly disinfected.

COMMUNICABLE DISEASES.

Contagious and infectious diseases.—Certain diseases are communicable; that is, they can be conveyed from one person to another directly or indirectly. Among these are consumption, smallpox, diphtheria, scarlet fever, erysipelas, pneumonia, typhoid fever, malarial fever, measles, mumps, and pinkeye.

These diseases are conveyed by means of germs, which are living bodies (too small to be seen by the naked eye) given off by the diseased person, by the breath or in the discharges from the body, and which enter the bodies of well people by means of food or drink, or in the air they breathe. These germs cling to the clothing, the skins of people and animals, and articles which have been exposed to the diseased person, and in a great number of cases are conveyed by flies, mosquitoes, and other insects.

Persons suffering from smallpox, diphtheria, scarlet fever, erysipelas, typhoid fever, measles, or mumps should be kept by themselves, and no one should go near them except those persons who must administer to their wants.

All discharges from patients having any communicable disease should be burned or disinfected with a solution of chloride of lime, or one made by dissolving antiseptic tablets in water, and buried.

Persons in attendance on those who are ill with a contagious disease should never sit on the patient's bed; in fact, it is better not to sit down in the room in which the patient is lying. The attendants should keep so far away from the sick person that his breath will not reach them. No one should put his lips to any food, drink, dish, or utensil that has been in the patient's room or tent. All food removed from the sick room or tent should be burned, and all dishes, glasses, or utensils of any kind should be washed thoroughly in boiling water before being used again. The dishes, etc., used by the patient should not be used by anyone else. All sheets and pillowcases when removed from a patient's bed should be placed in boiling water and kept there for at least 20 minutes. Other bedding had better be burned.

No one should touch the sick with sore or scratched hands. If there are any scratches or cuts on the hand, cover with adhesive plaster before going near the patient.

After being exposed to a contagious disease a person should wash his hands, face, and head thoroughly with antiseptic soap, and, if possible, change his clothing.

In sections of the country where malarial fever is prevalent everyone should sleep under mosquito netting, since malaria is conveyed by the bite of a certain variety of mosquito.

Kill all flies, mosquitoes, or other insects found in the sick room, and keep the patient under mosquito netting where it is possible to do so.

Let all the fresh air and sunshine possible into the sick room, except in cases of measles, where the eyes of the patient are very sensitive to light. In this latter disease admit all the air possible, but keep the room dark.

A tent may be disinfected in the following manner: Bury the ends of the tent walls several inches in the ground, packing the dirt tightly around them in such a manner that the gases generated by the disinfectant can not escape. Place an ordinary galvanized-iron bucket on the floor in the center of the tent, into which put permanganate of potassium, and over this pour formaldehyde, using 1 pint of formaldehyde and one-half pound of permanganate of potassium for each 1,000 cubic feet of air space. The person doing the disinfecting should immediately leave the tent, carefully closing the tent wall after him. If permanganate of potassium is not available, formaldehyde may be sprinkled over sheets and these hung up. The tent should not be opened for 24 hours, after which it should be thoroughly aired.

In all cases of communicable diseases, obtain the services of a doctor as soon as the disease is suspected.

DIAGNOSIS: MEANS AND METHODS.

Symptoms are evidences of disease, and by studying them we are able to learn with what disease the patient is afflicted.

Among the most prominent symptoms are pain, temperature of the body, and pulse.

Pain.—Pain can only be estimated by the statements of the sufferer. Sharp pains usually indicate acute inflammation or neuralgia. Dull pain, like that of a bruise, indicates chronic inflammation like rheumatism. Cramps may be due to the overuse of special muscles, or abdominal cramp (colic) may be caused by bile within the intestines or by some intestinal disease.

As a general rule the seat of the pain corresponds to the location of the cause, but this is not always the case.

Temperature of the body.—The temperature of the body can be determined by a clinical thermometer, which may be placed in the mouth, under the arm, or in the rectum. When the temperature is taken by the mouth the thermometer should be placed under the tongue, to one side, and the patient's lips kept closed, the thermometer being allowed to remain there from three to five minutes. Very hot or very cold drinks should not be taken for at least one-half hour before the thermometer is used.

The normal temperature of the body is 98.6° when taken by the mouth, about one degree higher when taken by the rectum, or one degree lower when taken under the arm. Abnormal temperature may be either above normal (fever) or below normal (subnormal).

Fever.—In general, fever is caused by inflammation, infectious diseases, poisoning, or from decomposed foodstuffs within the body, etc.

Subnormal.—Subnormal temperatures may be present in connection with convalescence from fevers, acute alcoholism, starvation, wasting diseases, etc.

A chill may be a true chill or a nervous chill. True chills are always associated more or less with fever, although the body may be cold and pale. Nervous chills may be seen upon occasions of excitement in individuals whose nervous systems are easily disturbed. Severe chills usually accompany the onset of pneumonia, peritonitis, blood poisoning, and malaria. A nervous chill is unattended by a rise of temperature.

Pulse.—The normal pulse rate of a person standing still is 72 per minute, an increase in rate usually indicating fever and a decrease a subnormal temperature. The pulse rate is, however, increased by any exertion and decreased when a person has been lying down for a time. It also varies greatly in many perfectly healthy individuals. The pulse can be counted at the wrist, the temple, and the neck.

The temperature and pulse should be taken twice daily and a record kept of the same, together with notes containing information as to the pain complained of by the patient, the actions of the bowels, frequency and quantity of urine passed, and any other prominent or extraordinary occurrences regarding the patient's condition which might help the doctor who treats the case in forming a correct idea of the patient's condition. These notes should be made at the time of each occurrence and should be handed to the doctor when the case is turned over to him.

SOME SYMPTOMATIC AFFECTIONS.

HEADACHE.

Headache is not a disease of itself, but is usually a sign of a diseased condition existing in some part of the body. It may be caused by many diseases, the excessive use of intoxicants or tobacco, fright, hunger, fatigue, worry, insufficient sleep, impure air, nasal irritation, or bad teeth. It may also be caused by eyestrain, the person needing glasses or wearing improper ones.

Headache from constipation or indigestion is usually of a throbbing, pulsating character, affects the front of the head and region around the eyes, and is made worse by sudden movements of the head. Pains due to defective eyes usually follow use of the same.

A sharp jumping pain usually means neuralgia. A dull heavy headache indicates stomach or intestinal trouble or the onset of a contagious or infectious disease.

Treatment.—Find out the cause of the headache and treat that. When immediate relief is required, it is best to apply hot cloths or ice bags to the head, give a hot mustard foot bath, and administer a brisk purge. The patient should remain quiet in bed.

Do not use the patent headache medicines sold at stores. They are dangerous and have often caused death.

VERTIGO (DIZZINESS).

Vertigo (dizziness) is a symptom and not a disease, and every possible effort should be made to find the cause. It may be due to disorders of the stomach, intestines, nervous system, or the arteries, or to diseases of the eye and ear, biliousness, or constipation. It may also be caused by alcoholism, the excessive use of tobacco, or be due to mechanical causes, as swinging, whirling, or riding on a ship, steam car, or elevator.

It may range from a severe shock, which is sudden and may be compared to a blow on the head and be of brief duration, to milder attacks in which there is simply a slight swimming sensation and which may last for months.

The patient feels as if he himself is whirling, sinking, or rising, or that surrounding objects are rapidly revolving, sinking, or rising. Nausea and vomiting may or may not occur, and loss of consciousness, if occurring at all, will only be momentary. Vertigo is increased by rising or sudden motion and diminishes when lying down.

Treatment.—During the attack let the patient rest in a horizontal position and give stimulants if necessary. Then try to find the cause and treat that.

FAINTING.

Fainting is a condition caused by too small a quantity of blood reaching the brain, due to a weakening of the heart's action. It may be an indication of disease of the heart, or caused by loss of blood, indigestion, hunger, exhaustion, or the foul air of overcrowded rooms. Fainting is common in any form of weakness, as when recovering from a severe illness or from overwork. Some persons faint at the sight of blood, and others faint from no perceptible cause whatever.

In all cases of apparent fainting care should be taken to ascertain that the patient is not suffering from shock, since these conditions closely resemble each other. Shock follows severe injuries and is a more or less permanent and always a serious condition, while fainting does not follow an injury and is only temporary. In fainting there is complete unconsciousness, while in shock the patient is more or less conscious.

Before an attack of fainting the person affected experiences a weak, sinking feeling, associated with a sensation of dizziness. Objects become indistinct and there may be a roaring in the ears. The face and extremities become pale, cold, and clammy; the pulse rapid and weak; and breathing apparently may cease.

Always make a careful examination to ascertain whether the fainting is due to hemorrhage, and, if so, take prompt steps to check the bleeding.

Treatment.—The object of the treatment is to get more blood to the brain. Lay the patient flat on his back at once, with the head lower than the body, and elevate the limbs, as this favors the flow of blood to the brain. Let the patient have plenty of fresh air and loosen all tight clothing, collars, belts, trousers, etc. Rub the forehead with cold water, alcohol, or whisky, or sprinkle the face and chest with cold water.

Smelling salts, camphor, or ammonia should be held under the nostrils, care being taken not to hold the remedy too close to the nose or mouth, as the strong fumes would be liable to cause inflammation of the air passages.

When the patient has completely regained consciousness and is able to swallow, *but not before*, give him a cup of coffee, a tablespoonful of wine or whisky in water, or half a teaspoonful of aromatic spirits of ammonia in water. If the patient is slow in reviving, mustard plasters should be applied to the pit of the stomach and the limbs rubbed *toward* the body in order to quicken the circulation.

If the treatment described does not revive the patient artificial respiration should be tried in the same manner as described under "Drowning" (p. 64).

Considerable time should be allowed to elapse after the patient has completely recovered before he is permitted to sit or stand.

NAUSEA (STOMACH SICKNESS).

Nausea is not a disease, but is a symptom of many diseases.

Treatment.—The patient should always lie down and remain quiet.

If the patient is lying down, unconscious, and unable to expel the vomited matter from the mouth, turn the head to one side, in order to prevent the vomited matter from getting into the windpipe and choking him.

If the nausea is caused by undigested food or by bile in the stomach, have the patient swallow a pint of warm water to encourage vomiting. A second or third glass of warm water may be given and vomited, so as to wash out from the stomach any offending material.

Black coffee may settle the stomach, as may also dry and burned toast. Orange juice with cracked ice or peppermint tea will often control vomiting, as will a mustard plaster applied to the stomach or ice applied to the pit of the stomach or lower part of the spine. In obstinate cases a drop of tincture of iodine and sweetened peppermint water may be given.

After the stomach is cleared a laxative drug should be given. Food should not be forced upon the patient until he shows a natural desire for it.

STOMACH AND BOWEL TROUBLES.

PTOMAINE POISONING.

Ptomaine poisoning comes from eating partly decomposed foods, usually oysters, fish, canned meats, milk, ice cream, cheese, and sausage. Food in this condition may be normal in appearance, taste, and odor.

In ptomaine poisoning the patient will have colicky pains in the stomach and abdomen, nausea (sick stomach), vomiting, and diarrhea, and the abdomen will be distended with gas. There is usually no fever.

Treatment.—The object of the treatment is to empty the stomach and bowels of the poison.

Make the patient vomit freely, and after the stomach has been emptied give a dose containing 5 grains of calomel and 5 grains of bicarbonate of soda. Apply heat or mustard plasters to the stomach and abdomen. Should the patient become very weak, give aromatic spirits of ammonia, half a teaspoonful in water every two hours. All food should be withheld for a day, after which for several days the diet should be confined to liquid foods.

ACUTE INDIGESTION.

Acute indigestion is caused by eating decomposed canned goods or tainted meats or food that is hard to digest; eating too rapidly and not chewing the food properly; or excessive indulgence in spirituous liquors. Swallowing liquids which are either too hot or too cold is also likely to cause this trouble.

Persons most liable to acute indigestion are those who live in bad hygienic surroundings; those who are in a run-down condition; those who are subject to gout or rheumatism; or those who have chronic indigestion.

It is usually first noticed by a feeling of uneasiness, or fullness and distress in the stomach, a lump in the throat that disappears on swallowing and immediately returns again, and there may be also thirst, nausea, vomiting, and the belching of gas or liquid, and sometimes the vomiting of undigested food. The tongue is usually coated, and there may be headache, dullness, dizziness, or extreme nervousness. The bowels may be either loose or constipated, and the patient may have colickly pain in the stomach and abdomen. There may also be a craving for sour drinks.

Treatment.—The object of the treatment is to remove the cause and then give the stomach a rest.

The patient should be made to vomit by giving large drafts of warm water, either plain or mixed with mustard (a teaspoonful of mustard to a glass of water), one cup of water followed by others until the desired result is obtained. Warm salt water may also be found useful for the same purpose.

In case the patient is attempting to vomit and can not do so, give plenty of hot water, as it will either tend to settle the stomach or dilute its contents and make the act of vomiting much easier.

After the stomach has been emptied and hot water can be retained for half an hour, give a dose of 5 grains of calomel and 5 grains of bicarbonate of soda. Hot poultices over the region of the stomach and abdomen will relieve the pain, should any exist. The patient should be kept in bed and the stomach given an absolute rest for about 24 hours, after which boiled milk or liquid food only may be administered for a couple of days. A full diet should be resumed very slowly.

DIARRHEA.

Diarrhea may indicate the onset of a disease or may be caused by overfeeding, improper food, drinking foul water or alkali or other water to which a person is unaccustomed, changes in the weather (exposure to damp and cold or to too great heat), etc.

Treatment.—As diarrhea is either caused by the presence in the bowels of some offending substance or by cold, a dose of calomel and bicarbonate of soda, 5 grains each, or from 2 to 4 tablespoonfuls of castor oil, should be given to clean out the bowels. This should be followed in about 6 hours with a pill of "Sun Cholera Mixture," which may be continued at intervals of 4 hours until four doses have been taken or relief obtained.

Attacks of diarrhea may be accompanied by nausea and vomiting, which may be controlled by applying a mustard plaster to the region of the stomach and giving a few swallows of *hot* (not warm) water.

In cases accompanied by great weakness, where stimulation is needed, a tablespoonful of brandy in three times that amount of water may be given as soon as the vomiting has been controlled. After the nausea has subsided, small quantities of milk and limewater may be taken by the patient.

During the continuance of the case and for a few days thereafter all solid food should be withheld, and the diet limited to such articles as gruel, weak broths, soft-boiled eggs, and milk. This is of great importance, as any imprudence in the diet at this time may cause the diarrhea to become chronic.

When diarrhea is due to cold the patient should wear a flannel binder around the abdomen.

DYSENTERY (BLOODY FLUX).

Dysentery may be either acute or chronic and often occurs in epidemics. It is most common in the summer and autumn, and the severest forms are usually met with in tropical countries. Impure drinking water, bad food, or unripe fruit puts the system in such a condition that dysentery is likely to occur.

This disease may begin either suddenly or gradually, the victim having colicky pains in the stomach, a burning sensation in the rectum, a constant desire to go to the stool, and a sensation in the rectum as if a foreign body was present, with a constant desire to expel it. There may also be diarrhea, loss of appetite, and nausea, and sometimes chills and fever.

Frequent evacuations of the bowels occur, only a small quantity being passed each time. The stools at first are usually like those of diarrhea, but after a few hours they contain blood and mucus, or a slimy, jellylike matter. In severe cases death may occur from exhaustion.

The best way of protecting oneself from this disease is to keep the body in a sound condition, avoid catching cold, guard against errors in eating, *and drink only water that has been boiled.*

Treatment.—Absolute rest in a warm bed is essential even in the mildest cases. If possible, the patient should use a bedpan, or some arrangement should be made by which he does not have to get up to go to stool, in order to insure him the greatest amount of rest, which is one of the most important factors in treating this disease.

Stop all solid food and let the patient have only milk and broths. Give 2 tablespoonfuls of castor oil, and repeat in six hours, if necessary. This to be followed by 5 grains of Dover's powder night and morning for several days. If the patient is inclined to vomit, have him lie on his back and keep quiet for three or four hours. If there is much prostration, give stimulants.

A doctor should be consulted as soon as possible.

As this disease can be conveyed from the sick to the well by means of the discharges from the bowels, the stools and the vessels which have received them should be disinfected and the hands of those handling the discharges washed with antiseptic soap.

CHOLERA MORBUS.

Cholera morbus is an inflammation of the stomach and bowels, accompanied with diarrhea, cramps, and vomiting. It usually occurs in summer and autumn and is caused by eating improper food, particularly unripe or spoiled fruits and vegetables, canned goods, ice cream, or by exposure to cold and dampness.

The onset is usually sudden, with vomiting after a feeling of uneasiness or cramps. The vomited matter first contains the contents of the stomach and later is composed of a slimy substance.

The actions from the bowels are at first solid or semisolid, but very soon become watery, and later lose their color. Although the patient may have a high fever, the hands and feet are cold. There is usually great thirst.

Treatment.—Patients should be put to bed and a mustard plaster placed on the stomach and abdomen, which should be followed by the application of heat to these parts, preferably in the form of poultices.

If improper food has been eaten, give a dose of castor oil as soon as the stomach will retain it.

For the thirst, give cracked ice with a little brandy sprinkled over it, or a teaspoonful of brandy in a tablespoonful of cold water.

COLIC.

Colic is a severe pain usually felt in the region of the navel or the middle of the belly. It may be due to the presence of undigested food in the stomach, cold drinks, a bilious condition, or overeating. It is often preceded by constipation and may be accompanied by vomiting.

Colic may also be an indication of gallstones, gravel, or appendicitis, and if the treatment herein described does not relieve the patient promptly consult a doctor about the case.

Treatment.—If the colic has been caused by overeating or undigested food, the patient should be made to vomit.

After the stomach has been emptied a small quantity of brandy or spirits of peppermint, diluted in hot water, may be given. A large mustard plaster or heat applied over the region of the pain will often afford relief. If the patient has been constipated, a dose of salts or castor oil should be given.

The diet for a few days should consist of light articles of food in small quantities at a time.

CONSTIPATION.

Constipation may indicate the onset of a disease, may be caused by change of diet, or may be due to the constitution of the individual. An individual should normally have one or two daily evacuations, or at least a movement every other day.

Treatment.—Persons inclined to be constipated may be able to overcome this tendency by eating mainly ripe fruits, vegetables, fats, and liquids. Oatmeal is a mild laxative for many people, and for a person subject to constipation brown bread is better than white.

A mild temporary attack of constipation may be overcome by drinking a tumblerful of cold water slowly on arising in the morning, or a glass of hot water when retiring at night. Smoking a pipe or cigar after breakfast is with many men a good laxative.

In constipated conditions due to change of diet, castor oil, rhubarb, magnesia, compound licorice powder, or cascara will be found beneficial, or a compound cathartic pill taken at night and followed by a dose of Epsom salts about half an hour before breakfast on the following morning.

Persons should not allow themselves to get in the habit of taking drugs for this condition where it is possible to avoid doing so by eating the proper kinds of food, cultivating the habit of going to stool regularly each day, or taking the proper amount of exercise.

AFFECTIONS OF THE HEAD, THROAT, AND LUNGS.

COLDS.

Under the term "colds" are included a number of different diseases, since a "cold" affecting one part of the body is different from a "cold" affecting some other part. The condition usually spoken of as a "cold," however, is "cold in the head."

The most frequent causes of "cold in the head" are changes in the weather, getting the feet wet, or sitting in a draft. This trouble may also be caused by irritating gases and vapors. It may also be a symptom of the onset of measles or influenza.

This ailment usually begins with sneezing, a feeling of weariness, headache, chilly sensations in the back, and a feeling of stuffiness in the head, the patient being unable to breathe through the nose. This is followed by a watery discharge from the nose and sometimes slight fever. The eyes are red and watery. Cases last about one or two weeks.

Treatment.—A hot mustard foot bath at night, using about 2 tablespoonfuls of mustard to a bucket of hot water, followed by 5 grains of Dover's powder and copious drinks of hot lemonade; after which the patient should be put to bed and covered with blankets in order to cause him to perspire freely.

If no Dover's powder is at hand let the patient have plenty of hot lemonade or a drink of whisky. Be careful that the covering is not thrown off while the body is wet, as to do so would make the condition worse.

A purgative should be given the following morning, which should be followed by 2 grains of quinine three times a day until the cold is broken.

EARACHE.

Earache may be caused by some trouble in the ear itself, or by bad teeth. It is always advisable in cases of earache to examine the teeth on the side on which the pain is located, and if a cavity is found treat as described under toothache.

Treatment.—If the trouble is due to conditions in the ear itself very hot cloths with a few drops of alcohol on them, applied over the ear so that the alcoholic fumes will enter, will frequently cure it.

In case this does not help, a few drops of hot sweet oil (not hot enough to burn) or 5 drops of the ear remedy mentioned under "First aid" (p. 9) dropped into the ear and a small plug of absorbent cotton inserted afterwards may stop the ache.

If these remedies fail see a doctor, as an abscess may be forming, which might result in permanent deafness.

TOOTHACHE.

Treatment.—If a cavity can be found in the tooth, clean it out with a piece of absorbent cotton on the end of a toothpick, then fill the cavity with a small bit of cotton dipped in a mixture of equal parts of oil of cloves and oil of peppermint. When the pain has ceased, fill the cavity with toothache wax, and see a dentist as soon as convenient.

If this treatment does not stop the pain or no cavity can be found, a raisin or fig split in half, or a toothache plaster applied to the gum over the root of the aching tooth, or hot water held in the mouth may afford relief.

Every man before going into the field should have his teeth examined by a dentist. Men whose duties keep them constantly in the field should have this examination at least once a year.

INFLAMED EYES.

Inflamed eyes may be caused by foreign bodies in the eyes, irritation due to smoke, dust, or gases, or the onset of certain diseases.

Treatment.—Drop in the outer angle of the eye (the angle away from the nose) 2 or 3 drops of the eye drops (p. 9). If the eyes are much inflamed after this treatment, cover them with absorbent cotton or soft cloths wet with witch-hazel, holding this dressing in place with a bandage around the head, being careful not to tie the bandage tight enough to press on the eyeballs. If witch-hazel is not available the absorbent cotton or cloths may be soaked in cool water.

Never rub the eye, as to do so will only increase the irritation or more firmly embed a foreign body in the soft tissues of the eye.

In all cases where the eyeball has been injured a doctor should be consulted.

Foreign bodies in the eye.—If the inflammation is caused by a foreign body in the eye, such foreign body should be removed at once, if possible. This may be accomplished by pulling the upper lid down over the lower lid several times, but if this fails, look for the foreign body under the eyelids.

To examine under the lower lid have the patient look up while the lower lid is pressed down; to examine under the upper lid have the patient bend his head backward and look down; then place a match across the upper lid near the top and turn the lid back over the match. When the foreign body is seen it should be removed with the corner of a clean handkerchief and the eye drops applied.

Lime in the eye.—Should the inflammation be caused by the presence of lime, bathe the eye with a solution of a teaspoonful of vinegar to a cup of water.

SORE THROAT.

Sore throat is usually caused by exposure to wet and cold, the inhalation of irritating gases, smoke, or dust, or it may accompany a cold in the head.

In addition to the soreness in the throat there is apt to be chilliness, more or less fever, and possibly stiffness and tenderness along the sides of the neck. Persons who are frequently subject to attacks of sore throat should keep their feet dry and, if possible, avoid taking cold.

Treatment.—The throat should be gargled every hour with salt water or baking soda and water. Hot milk is a particularly good gargle, since the heat not only reduces the inflammation, but the milk itself seems to have a soothing effect on the throat.

The bowels should be kept open by means of salts. If there is fever, give 4 grains of quinine every four hours. The patient should have only a nourishing liquid diet.

In all cases a doctor should be seen as soon as possible, particularly if any grayish spots can be seen at the back part of the throat, as diphtheria frequently starts in the same manner as an ordinary sore throat. Sore throat may also be a symptom of rheumatism or syphilis, or may indicate the onset of an infectious or contagious fever.

PNEUMONIA.

Pneumonia is a communicable disease which usually affects one lung, although it may affect both. In the majority of cases, however, it is in the right lung alone that the trouble is located.

Pneumonia is ushered in with a chill, during which the temperature rises from 103° to 105° F. The face is flushed, the tongue coated, and there is great distress in the chest, with difficult breathing. A cough is present, which at first is dry, but later a bloody mucous saliva is expectorated.

Pneumonia in drunkards, or those who use alcoholic drinks extensively, is usually fatal.

Treatment.—The patient should be gotten to a physician as soon as possible, in the meantime having been given a purgative, kept on a liquid diet, and given plenty of water to drink. The chest and back should be thoroughly rubbed with coca butter, lard, or vaseline and should be kept well protected. The patient should be kept warm, but have plenty of fresh air.

TUBERCULOSIS.

Tuberculosis, which is responsible for more deaths than any other disease in America, is a preventable communicable disease. Hereditary acute diseases of the lungs, syphilis, bad habits, overwork, and insufficient nourishment are factors which put the body in such a condition that when the germs of tuberculosis enter they find a fertile soil. The early symptoms, which come on gradually, are a hacking cough, slight fever in the afternoon or following exertion, frequently a subnormal temperature in the morning, gradual loss of weight, spitting of small quantities of blood, and chills alternating with flashes of heat.

Treatment.—Any person who suspects he has tuberculosis should immediately consult a physician. In the meantime he should remember the extreme contagiousness of this disease and carefully observe the following rules:

He should use a separate drinking cup, knives, forks, dishes, washbasin, and towels, all of which should be kept and washed separately from similar articles used by other men in the camp.

He should never cough or sneeze near other persons or in a closed room, tent, car, or carriage except when holding a handkerchief or similar article before the mouth.

He should spit only upon a cloth, which should be burned as soon thereafter as practicable.

ABSCESSES.

An abscess is an inflammation due to infection with pus-producing germs, usually through some injury or opening in the skin or mucous membrane.

Treatment.—The formation of pus may be prevented by painting the inflamed area daily with tincture of iodine.

Hot applications are useful in relieving the pain.

The patient should see a doctor as soon as possible, as there is always danger in this condition of general infection.

BOILS AND CARBUNCLES.

A **boil** is a circumscribed, hard, painful, infected swelling, which begins as a small red pimple, usually around a hair, and is first noticed by the stinging and itching sensation it causes. It rapidly increases in size and terminates by the formation of a mass of dead tissue called the "core."

A **carbuncle** is a similar infection and corresponds to a collection of boils in one place. It begins in the same way, but gradually spreads. Carbuncles vary in size, some of them being several inches in diameter.

Boils may occur on any part of the body, whereas carbuncles are most frequent on the neck, back, and buttocks, the back of the neck being the favorite seat.

Boils usually occur in younger and carbuncles in older people. Both are caused by the introduction of germs through some slight wound or abrasion of the skin, or from a run-down condition of the system due to bad food or unsanitary surroundings. A frequent cause of infection is by scratching the skin with the dirty finger nails or through wearing soiled clothing.

Where one boil exists others are likely to follow if the pus from the original boil is allowed to flow over the skin and thereby set up new centers of infection. The occurrence of a number of boils on the same part of the body is usually the result of infection from the original one.

A boil has only one center of pus formation, while a carbuncle is perforated with numerous holes from which pus oozes, presenting a honeycombed appearance.

A carbuncle may be very serious; one situated on the head or face is exceedingly dangerous, especially if the patient be aged or debilitated, and death frequently follows this complication.

With carbuncles the constitutional symptoms may consist of loss of appetite, coated tongue, chilliness, and great prostration. In milder cases of carbuncles there may be little or no fever, but there is usually more or less fever associated with the large ones.

Treatment.—The treatment of boils and carbuncles is similar.

The best means to prevent the formation of boils or carbuncles is to keep the skin in a healthy condition by the free use of hot water and soap. When the boil or carbuncle is forming, a compress wet with a strong antiseptic solution (7 grains of bichloride of mercury to 1 pint of water) should be applied and kept hot. Moist heat may prevent the formation of pus. Poultices should never be used.

After the expulsion of the core the sore should be disinfected with peroxide of hydrogen or a mild solution of bichloride of mercury, and dry dressings applied.

If necessary, open freely with a perfectly clean knife thoroughly cleansed with an antiseptic solution or heat, taking care that the pus from the sore is not allowed to flow over the surrounding skin. Do not make violent attempts to squeeze out the core, as great injury may result.

The hands and nails should be thoroughly cleansed each time before and after dressing the sore.

In patients suffering from boils and carbuncles all abrasions (cuts, scratches, etc.) on the skin should be carefully treated in order to guard against further infection.

Should fever accompany a carbuncle, 2 grains of quinine every four hours may prove beneficial.

Patients suffering from carbuncles should be given only easily digested food and such stimulants as may be necessary. Later, tonics may be required.

In all cases of carbuncle or where persons are afflicted with groups of boils a doctor should be consulted as soon as possible.

RASH (BROWN-TAIL MOTH).

The brown-tail moth is found in the New England States and on eastern Long Island. On these moths and their caterpillars are certain hairs which exert a highly poisonous effect on the human skin, causing small eruptions accompanied by severe itching. The hairs contains minute quantities of poison which act on the blood corpuscles, so that intense suffering results to the victim.

If the minute hairs or broken parts of hairs are inhaled, poisoning of the mucous membrane of the nose, throat, and lungs results, which in severe cases, seriously affects the person concerned.

Treatment.—For the external poison, hot-water baths which cause excessive perspiration, or bathing the affected parts with alcohol or with the following mixture, which should be shaken thoroughly before using: Carbolic acid, one-half dram; zinc oxid, one-half ounce; limewater, 8 ounces.

RHEUMATISM.

Rheumatism is an inflammation of the muscles or joints caused by exposure to a cold, damp atmosphere; sudden cooling of the body after active exercise; or sitting in a draft. It occurs most frequently during the winter or spring.

Rheumatism may or may not be ushered in with a chill. There is always more or less pain, stiffness, and difficulty of movement in the affected part, and possibly slight tenderness. In some forms of rheumatism there will be no fever, in others (rheumatic fever and inflammatory rheumatism) the temperature may be quite high.

Treatment.—It is advisable, where possible, that the patient go to bed and rest between blankets. Wrap the part in flannel and keep it quiet. Heat applied to the part will often dull the pain, as will rubbing with chloroform liniment. Hot poultices are also very serviceable in relieving rheumatic pain.

The bowels should be made to move by giving a dose of 5 grains of calomel and 5 grains of bicarbonate of soda. Salicylate of soda should be given in 5 or 10 grain doses every 4 hours. Dover's powder, 5 grains, may be given at night if the patient is very restless and suffering much pain.

The diet should consist of simple, easily digested food, particularly avoiding meat or any fruits or vegetables which contain acid, except the lemon. The juice of the lemon is very beneficial to persons suffering from rheumatism.

The patient should drink water freely to keep the kidneys flushed.

FITS.

When a person has an **epileptic fit** he will utter a peculiar cry and fall to the ground, foaming at the mouth, with face red and contorted. The muscles of the body and limbs will be convulsed, the hands clenched, and frequently he will bite his tongue. After the convulsion passes the patient will go into a deep sleep.

Treatment.—The object of treatment is simply to prevent the patient from hurting himself.

Do not attempt to stop the convulsions or to open the clenched hands, as this will only serve to increase the convulsive movements. The patient should be kept quiet on the back and the clothing loosened about the neck and abdomen. After the convulsion has passed let the patient sleep.

FEVERS.

MALARIAL FEVER.

Malarial fever is caused by the bite of a certain kind of mosquito. The disease is usually contracted during the night, since that is the time at which the mosquito is most active. It is important, therefore, that men in mosquito-infested camps should be protected by a mosquito net while sleeping. Since the disease is transmitted by the mosquito from a person having malarial fever to one who is well, all patients suffering from this disease should, when lying down, also be covered by mosquito netting in order that the insects may not obtain malarial poison from their bodies. Every person who has malaria is a center from which the infection is spread.

There are usually three distinct stages in malaria—the chill, the fever, and the sweat—following each other in the order named. These may occur daily, every other day, or every fourth day. On the days on which they do not occur the patient may feel in his usual health. These conditions may be accompanied by headache, loss of appetite, and sometimes by vomiting, and the symptoms may be either mild or severe.

Treatment.—The bowels should be kept open freely. Quinine is the remedy for malaria and should be given in doses of at least 3 grains every four hours until the patient feels perfectly well on one of the days which should mark an attack. After that, smaller doses should be taken for several days.

The time to administer the quinine is when the sweating begins. It should be given in a 10-grain dose and followed as before directed.

During the chill the patient should be wrapped in blankets and given hot drinks, and during the hot stage should be given cold drinks, lemonade, etc. If vomiting occurs, place a mustard plaster over the region of the stomach (above the navel), or feed with small pieces of ice. Headache may be relieved by cold applications or by bathing the forehead in alcohol and allowing the latter to evaporate.

TYPHOID FEVER.

Typhoid fever is caused by a germ which enters the system with food or drink, such as oysters from contaminated beds, uncooked vegetables, or milk and water.

Flies are conveyors of the typhoid germ, often coming direct from some contaminated discharge of a typhoid patient and alighting on food to be eaten by some one else. It is thus very important that the mess tent should be screened and that all foodstuffs be carefully protected against flies.

Water is probably the chief source of infection, and whenever there is the slightest doubt about its purity *all water for the camp should be boiled* before being used for drinking purposes or for washing dishes and cooking utensils. The presence of typhoid in the vicinity of lumber camps and the like, or the fact that cases of typhoid have previously occurred in the region, are reasons for boiling the water.

Typhoid fever usually begins with a tired feeling, and probably diarrhea or constipation, with a feverish feeling in the evening. Persons in a region in which typhoid fever is known to exist, who feel tired and listless out of proportion to the amount of work they perform, should see a doctor without delay, as it is very important that both the physician and the patient know of the existence of typhoid fever at the earliest possible date.

Nosebleed is also an early symptom and persons who have nosebleed from no known cause and who later develop a tired, listless feeling, should consult a physician as soon as they can reach one.

It is far better that a man who suspects he has typhoid fever should find out that he does not have it than to stay in camp until he becomes desperately ill and then find out that he has it.

Typhoid fever is a disease in the treatment of which the first-aid man will have no place except to get the patient to the nearest physician in the quickest possible time.

Whenever a member of the party is suspected of having typhoid fever the person in charge of the sanitation of the camp should see that all the passages from the bowels of the patient are thoroughly disinfected before they are thrown into the trenches, and all persons who handle the disinfectants should thoroughly disinfect their hands and the vessels which contained the discharges.

It is now possible for a person to be vaccinated against typhoid fever, and persons, particularly those located in neighborhoods where the disease is more or less prevalent, should take this treatment. No one should be vaccinated unless in good health at the time, and those who have had typhoid fever need not be. Vaccination has almost eliminated typhoid fever from the Army and Navy, where its use is compulsory, and all employees are strongly advised to take this treatment.

SMALLPOX.

Smallpox is one of the most contagious diseases, spreading rapidly among people who have not been successfully vaccinated. It may be communicated directly from one suffering with the disease to a second person, or may be conveyed by a third person, or by clothing, or by anything else that has been in a room or tent occupied by a person suffering from this disease.

Smallpox usually begins suddenly with a chill, severe pain in the back and loins, high fever, and intense headache. These symptoms usually appear in from 8 to 14 days after exposure to the disease. About the third or fourth day an eruption usually appears on the forehead and gradually extends to other parts of the body. This eruption at first appears as a bright red spot, slightly elevated, and about the second day will feel like a shot under the skin.

The face becomes swollen and the eyes may be closed.

Cough may be present.

There may or may not be vomiting.

Treatment.—The patient should be put to bed and given a purgative. Only liquid diet should be allowed.

Only one person, preferably one who has had smallpox, or, if such a person is not available, one who has been recently vaccinated, should be allowed to go near the patient. This person should wear an old suit of clothes, which should be put on every time he approaches the patient and removed as soon as he leaves the latter. This suit should later be burned.

The attendant should cover his head with a cloth or towel whenever he is waiting on the sick and should thoroughly wash his hands and face with a disinfectant soap each time after leaving the patient.

All discharges from the patient should be thoroughly disinfected.

When the patient has been removed from the camp or has been properly isolated, all the clothing and everything in the room or tent in which the patient was confined should be burned. All persons who have come in contact with the patient for several days previous to the attack, or since the attack, should be vaccinated at once. A doctor should be reached as soon as possible and report made of the case to the proper State authorities.

CAMP SANITATION.

From the standpoint of sanitation the usual requirements in selecting a camp site are dryness, elevation, and some protection from the winds. High, well-drained ground should be selected when practicable. Old camp sites are not the best, since the soil may be polluted and perhaps infected. Whether to use an old site or not must be a matter of judgment for the man in charge of a field party.

Sites covered with rank vegetation should be avoided, as such growth indicates excessive moisture. Open woods are suitable camp grounds, as they afford protection from the sun in summer and the winds in winter, but dense woods should never be occupied on account of the darkness, stagnation of water, and decaying vegetation.

All underbrush should be removed from camp, but the sod should not be disturbed. Grass should be cut from the tent site, as otherwise it will die and help to pollute the air. The soil should be pounded and covered, if practicable, with a layer of ashes or gravel.

A trench about 6 inches wide and 4 inches deep should be dug around the tents, and then carried several feet away and sloped so that, in the event of rain, the water will be carried away from the tent.

In permanent camps the tent should be floored, but the floors should be so constructed that they can be removed for the purpose of cleaning the ground underneath.

Tent walls should always be kept looped up in summer, and even in winter whenever possible. Every three or four days the tent should be taken down and turned inside out, so that it can be properly sunned.

At least once in every two weeks the camp should be removed some distance from the old site, if there is any other available ground suitable for the purpose. If for any reason the camp can not be moved, the entire site should be thoroughly cleaned, the tents being taken down and the flooring taken up.

Bedding should be removed and aired daily, being hung out on lines, if practicable.

As ground is always more or less damp, a person should never sleep directly upon it, if this can be avoided, but make a bed of hay, straw, etc.

Kitchens and dining tents, which should be screened to prevent flies from contaminating the food, should be located to the windward of camp. If trenches are constructed for privy purposes, these should be at the opposite side. Such trenches, which should not be more than 2 feet deep and of a length to allow 1 running foot for each five men, should be dug east to west, in order that their contents may be exposed to direct sunlight and should, if possible, be screened; and they should be occasionally burnt out with straw and crude petroleum or kerosene if these are obtainable.

Eating in the tents occupied for sleeping purposes should be avoided whenever possible, as the presence of food attracts flies, ants, rats, etc.

The camp should be thoroughly policed (cleaned) each day, and all rubbish taken some distance away and burned.

All kitchen refuse should be promptly burned.

Drinking water should be boiled whenever it is subject to possible contamination.

Common drinking cups should not be used.

In camps located in mosquito-infested districts, lights should not be allowed within the tents unless absolutely needed, and their use elsewhere about the camp should be limited.

As many diseases are communicated through the agency of flies, which swarm about fecal matter and filth of all kinds deposited upon the ground or in shallow pits and directly convey it to the food, all foodstuffs should be properly protected against the possibility of such contamination. The water supply to the camp may be contaminated in the same way.

As infection is frequently carried on the hands, persons should always wash their hands before meals.

The first requisite for good health is cleanliness of person and clothing. The former is usually not difficult to obtain, but the latter often presents serious obstacles in the field. Every opportunity should be taken to wash the underclothing. If very dirty it should be soaked for a while before scrubbing. Woolen articles should be rinsed and scrubbed as little as possible, as such treatment renders them hard and causes shrinkage. When water is not available, the underclothing should be changed, dried in the sun, aired, and beaten.

The teeth should be brushed twice a day.

A patient sick with a communicable disease should be isolated and one member of the party detailed to look out for his care and comfort. The person so detailed should, if practicable, be one immune to the disease with which the patient is afflicted.

Any person suffering from malaria or yellow fever should be kept under mosquito bars and the tent in which he is confined closely screened with mosquito netting.

In cases of typhoid fever, camp diarrhea, and dysentery the discharges from the patient should be immediately disinfected and buried.

In malarious localities, from 3 to 5 grains of quinine may be taken in the early morning to prevent an attack of this disease, but the taking of quinine as a routine practice is not recommended.

In certain portions of Montana and in other places in the West, Rocky Mountain spotted fever is prevalent. Ticks are the conveyers of this disease, and whenever a tick is found on the body it should be removed at once. If it has attached itself to the skin, rubbing with grease will cause it to loosen its hold. The bite should then be touched with tincture of iodine or in some other way cauterized. In localities where the disease is particularly virulent, field men would do well to wear leggings and shirts with high collars and long sleeves covering the wrists, as a protection against ticks.

When lice are found on the body, closely cut the hair of the parts where the lice are located and apply blue ointment or a solution of corrosive sublimate 1 to 500. For head lice, equal parts of kerosene and olive oil should be applied. The underclothes should be boiled or washed in salt water.

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